ENERGY AGENCY
OF THE REPUBLIC OF SERBIA

2023

2023 ENERGY AGENCY ANNUAL REPORT

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Serbian Energy Sector Report

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Annual and Financial Report

Belgrade, May 2024

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INTRODUCTORY REMARKS

In line with the provisions of the Energy Law of the Republic of Serbia ("Official Gazette of RS", No. 145/14, 95/18 other laws, 40/21, 35/23 – other laws and 62/23 – hereafter: Law), the Council president and members of the Energy Agency of the Republic of Serbia are accountable for their work and the work of the Agency to the National Assembly of the Republic of Serbia. They submit the report to the National Assembly once a year. Apart from the annual report and financial report, this document also includes the report on the situation in the energy sector of the Republic of Serbia in areas under the Agency's jurisdiction.

The report on the Serbian energy sector includes the review on the situation and activities in electricity and natural gas markets and partly in oil and oil derivatives market, security of electricity and natural gas supply, activities of general interest and electricity and natural gas customer protection. In terms of its structure and its content, the Report is also in line with the recommendations of the Council of European Energy Regulators – CEER.

The Council of the Energy Agency of the Republic of Serbia was elected on March 22, 2018 on the session of the National Assembly of the Republic of Serbia ("Official Gazette of RS", No. 23/18) upon a vacancy invitation in line with the Energy Law. During 2023, 48 sessions of the Council of the Energy Agency of the Republic of Serbia were held in total (46 ordinary ones and 4 extraordinary ones). In line with the Law, all decisions within the scope of the Agency's work are adopted by the Council of the Agency. During the sessions of the Council of the Energy Agency of the Republic of Serbia, decisions, approvals, certificates, conclusions and other acts in the field of price regulation, energy market establishment and monitoring, license issuance and withdrawal and methods of organisation of the Agency and other issues within the jurisdiction of the Council were adopted. In 2023, the Energy Agency of the Republic of Serbia was fulfilling its obligations arising from the Law which are relevant for the enforcement of the law, and Serbian energy market functioning. By expressing its views, the Agency also played an important role in the work of Energy Community (EnC) institutions and also offered expert support to other national institutions in their activities.

The security of supply of electricity, natural gas, and oil derivatives in 2023 was satisfactory. Electricity consumption by end-users in 2023 decreased by 0.6% compared to 2022. Consumption decreased by 2.8% in households, 3.1% in other low-voltage consumers, increased by 1.7% in medium-voltage consumers, and by 5.9% in high-voltage consumers. Consumption for thermal and hydroelectric power generation increased by 8.3%. Overall electricity production in 2023 increased by 13.8% compared to 2022 (thermal coal-based generation increased by about 0.6%, thermal power plants increased by 49%, hydroelectric plants connected to the transmission system increased by 40.8% due to favorable hydrological conditions, wind power plants connected to the transmission system generated 12.4% more electricity, and plants connected to the distribution system generated 22.8% more electricity). In 2023, electricity imports were 1,893 GWh, which was 24% lower than exports. Natural gas consumption in 2023 decreased by 3% compared to 2022. Consumption decreased by 1% in households, 3% in district heating plants, and 3% in industry and other consumers.

From the total sales volume on the free market, in 2023, 53% of electricity (compared to 51.2% in 2022) and 81.5% of natural gas (compared to 81.3% in 2022) were sold. Household consumers, at approximately 7,000 metering points mainly for apartments owned by companies that procure electricity on the free market, exercised the right to choose their supplier and mostly purchased electricity at regulated prices.

Electricity guaranteed supply prices were modified in January, May and November 2023 while electricity transmission and distribution use-of-system charges were not modified in 2023.

The Energy Sector Development Strategy until 2025 forecast electricity consumption of less than 1% annually. In that period, this consumption should be covered by the extension of the lifetime and increased capacities in existing power plants and by the construction of new ones. The third unit at TPP Kostolac B is the most significant project that commenced implementation. During 2023, the wind farm Krivaca with an installed capacity of 103 MW and the thermal power plant-heating plant Vinča with an installed capacity of 30.2 MW were connected to the transmission grid, resulting in a total installed capacity of 7,933 MW by the end of the year. Additionally, a total of 40 MW of new capacity (both renewable and conventional sources) was connected to the distribution system, bringing the total installed capacity of 389 small power plants to 294 MW by the end of 2023.

The plans of the Republic of Serbia for Emission Reduction envisaged the operation of some of the oldest thermal units by 2026 where, due to old-fashioned technology, the implementation of measures for the reduction of emission of sulphur and nitrogen oxides was not planned. These units will gradually stop operating and their production will be replaced by the above-mentioned new capacities. Measures to reduce nitrogen oxide emissions have been implemented on the remaining units, significantly reducing sulphur gas emissions as well. These environmental measures also have economic implications, affecting the costs of electricity production in thermal power plants.

In line with the approved Act on Exemption of New Natural Gas Interconnector *Gastrans* LLC Novi Sad, the Energy Agency of the Republic of Serbia continuously examined the work of this company in 2023. To this end, the Report on Measures Taken for the Realisation of Non-Discriminatory Treatment Programme for 2022 which was submitted by the Compliance Officer in April 2023 was analysed and considered although there is no legal obligation to approve this document.

Niš – Sofia gas pipeline is the project which is supported by the EU institutions. In 2019, Energy permit was obtained, expertise control of the feasibility study and preliminary design were completed, construction permit was obtained and the

main design was completed. The construction of this gas pipeline was initiated in 2022. In 2023, the construction was completed was completed in 2023, with the pipeline entering into trial operation in December 2023.

Natural gas is the most common energy source in district heating systems which are dominant heating method in urban areas. Relatively low level of gasification of households (around 12.3% of the total number) indicates that there is a potential for a bigger growth in this sector which implies the development of gas infrastructure.

Prices for natural gas in public supply were adjusted in January, May, and November 2023, while prices for access to the natural gas transport and distribution system remained unchanged throughout 2023.

Adequate long-term policy of regulated prices, predictable for both customers and investors is very important for the sustainable development of energy systems which is also the current trend in the EU countries. An obligatory prerequisite for the change in regulated electricity prices for households is an increase in the number of protected socially vulnerable customers because the number of protected customers in 2023 who exercised the right to bill reduction amounted to around 17,000 while the number of them who could exercise this rights amounts to more than 300,000 according to the assessment of competent institutions.

While approving regulated prices, the Council of the Energy Agency of the Republic of Serbia insists on rationalisation in the operations of energy companies and on the acknowledgement of justified costs only. High electricity losses in the distribution network represent one of the highest costs and these are regularly acknowledged by the Agency on the level lower than the actual one, in line with the plan for loss reduction. In 2023, distribution network losses decreased by 0.38% in comparison to 2022 and they amounted to 10.85% of electricity withdrawn into the distribution system which is high in comparison to the losses justified on the technical ground. It is also necessary to intensify investments in the electricity distribution network, transfer of metering devices and of connection lines and to have more efficient replacement of metering devices.

In 2023, *EMS* JSC continued their activities aiming at system development and strengthening cross-border capacities and participation in coordinated cross-border capacity auctions. In 2023, the scale of trade in the organised market SEEPEX – electricity exchange was increased by 46% on the day-ahead market. Activities continued to be taken so as to develop regional electricity market. The integration into the EU market also requires adequate participation of the institutions of the Republic of Serbia (regulatory ones as well) in the relevant EU institutions so as the interests of the country would be protected adequately.

In 2023, indicators for unplanned electricity supply interruptions in the transmission and distribution systems were worse compared to 2022 and below the European average. Data collection on natural gas delivery quality was also conducted in 2023, with all energy entities providing the requested data to the Agency. One unplanned interruption occurred on transport systems in 2023, while the highest number of unplanned interruptions in distribution systems was due to the actions of third parties.

In 2023, a total of 484 submissions were received by the Energy Agency of the Republic of Serbia, mostly concerning the operations and conduct of energy entities in various domains of their business. The Agency processed all received complaints and provided responses to their submitters, forwarding cases to competent state authorities for further action. The Agency increased its activities in market monitoring regarding the conduct of energy entities towards customers and system users and in protecting the rights and interests of energy consumers.

Council of the Energy Agency of the Republic of Serbia

May 2024

SERBIAN ENERGY SECTOR REPORT

1. ENERGY DEMAND IN SERBIA

In this chapter, the latest available data on total primary and final energy consumption, along with other energy-related data (mostly from 2022), for Serbia are presented, compared with the European Union.

The primary energy consumption in Serbia, excluding the Autonomous Province of Kosovo and Metohija (APKM[1]), was 16.42 million tonnes of oil equivalent (Mtoe) in 2022. Serbia is characterized by a high share of coal, predominantly low-calorific lignite, in total primary energy (about 42%, significantly higher compared to the EU's 12% share), which is predominantly used for electricity generation. The substantial use of domestic lignite enables Serbia to maintain relatively high energy independence in electricity production compared to other European countries, with relatively lower and stable costs. However, lignite use in electricity production increases negative environmental impact. Long-term, this fact increases the risk of cost increases due to carbon dioxide emissions and greenhouse gases globally.

In 2022, Serbia's net energy import dependency was 45%, lower than that of most European countries (which was 62.5% in the EU). Serbia's import dependency increased compared to the previous year (when it was 34.8%) due to increased imports of all energy sources, particularly coal (up by 42%), natural gas (up by 25%), and electricity (up by 20%).

Table 1-1: Energy sector of Serbia (without APKM) – some indicators for 2018 - 2022

	Measurement unit	Year				
		2018	2019	2020	2021	2022
Population number, in the beginning of the year	thousands	7,001	6,964	6,927	6,647	6,641
GDP per capita, per spending power parity	Fixed $ from 2017	17,453	18,292	18,210	19,831	20,886
Primary energy consumption	Mtoe	15.53	15.42	15.76	16.23	16.42
Final energy consumption	Mtoe	8.44	8.36	8.68	9.26	9.48
Import dependence	%	34.8	35.6	30.2	34.8	45.0

Data: RZS, EUROSTAT, MRE

Compared to the European Union (Figure 1-1), gross domestic product of Serbia per citizen was calculated in line with the purchasing power parity (which reflects the level of development and standard in a more realistic manner) in 2022 was on the level of 44%, consumption of total primary energy per capita – 79% and final electricity consumption – 81%.

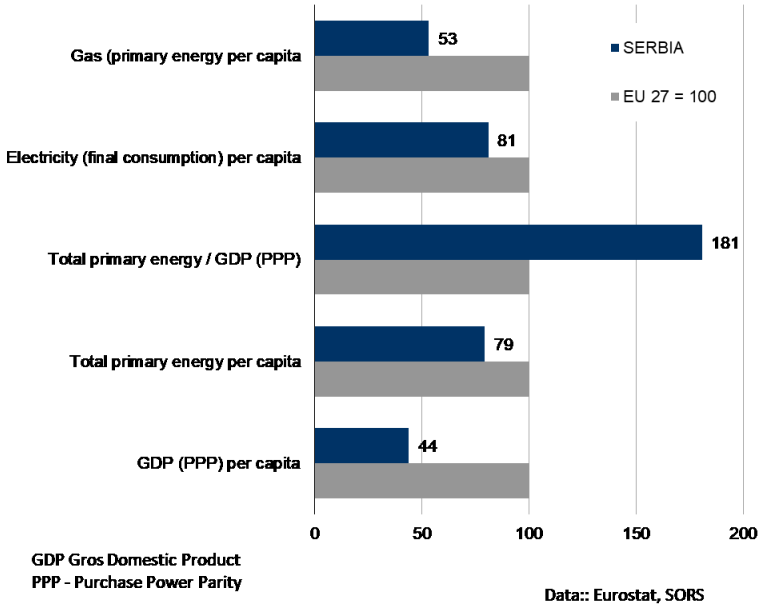

Figure 1-1: Comparative indicators of Serbia and the European Union in 2022

Energy intensity, i.e. total primary energy consumption per domestic product unit (per purchase power parity) was by 81% higher than the European average (it increased in comparison to 2021 when it was higher by 69%). Greater energy intensity is partly a consequence of inevitable technical losses in the process of transformation of lignite into electricity (two thirds of electricity is produced from lignite). However, it is primarily due to irrationality, i.e. low efficiency in consumption in

[1] The treatment of energy data for the territory of the Autonomous Province of Kosovo and Metohija (APKM) in this report depends on their availability, reliability, and the need to present them if it concerns a unified function across the entire territory (a single regulatory area), taking into account United Nations Security Council Resolution 1244 of June 10, 1999.

households, industry, due to low rate of capacity use and old technology, as well as in other sectors. Primary gas consumption per capita amounts to around 53% of the European Union.

An important difference in the final energy consumption structure in comparison to the European Union lies in the high consumption share in households in Serbia and twice as high energy consumption share in agriculture in the European Union. Figure 1-2 indicates the structure of final energy consumption in 2022 in Serbia and in the European Union according to EUROSTAT data.

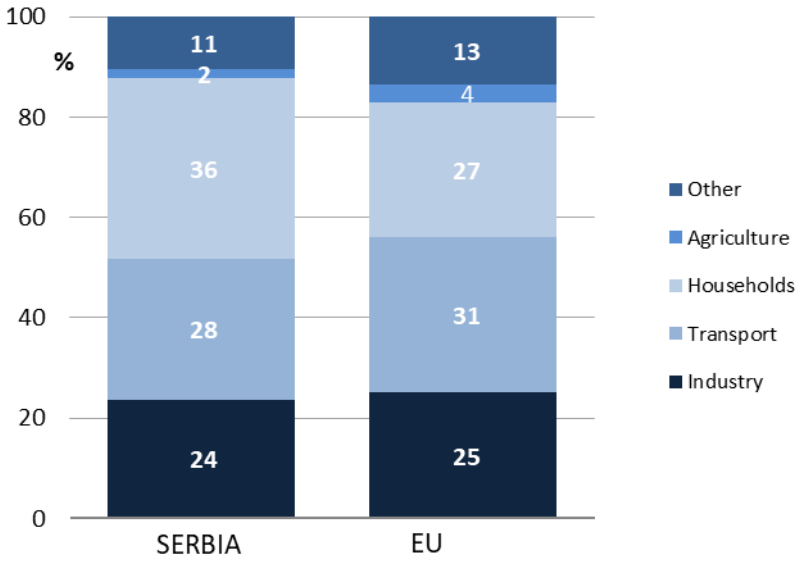

Figure 1-2: Final consumption structure (without non-energy consumption) in 2022

2. ELECTRICITY AND NATURAL GAS MARKET IN 2023

2.1 Legal and regulatory framework

The legal and regulatory framework for the development of electricity and natural gas market in the Republic of Serbia was established by the Energy Law ("Official Gazette of RS", No. 145/14, 95/18 other laws, 40/21, 35/23 – other laws and 62/23 – hereafter: Law), The Law on Renewable Energy Source Use ("Official Gazette of RS", No. 40/21 and 35/23) and Law on Energy Efficiency and Rational Use of Energy ("Official Gazette of RS" No. 40/21) and by-laws which are harmonised with the Third EU Energy Regulations Package.

Electricity and natural gas markets are largely regulated by separate by-laws which acknowledge the specificity of each market, such as general conditions of delivery, electricity market codes, transmission and distribution network codes, methodologies for setting use-of-system charges, price of regulated supply of households and small-scale customers and connection costs. Some regulations which relate to the protection of final customers and their rights are common for electricity and natural gas, as well as the legal acts regulating: switch of suppliers of final customers who have signed a contract on full supply; monitoring technical and commercial indicators and regulating quality of delivery and supply; exercising the right of a final customer to access the data on his/her consumption; proceedings and imposing measures and keeping records of imposed measures; prohibition of market abuse and registration of wholesale players. The regulation on the method, procedure and deadlines for keeping accounting records, implementing unbundling of accounts for each activity and submission of data and documentation for regulation purposes. Additionally, the regulatory framework regarding renewable energy sources and energy efficiency, defined in 2021, also included subordinate regulations enacted by the Agency for Determining Maximum Market Premiums or Maximum Feed-in Tariffs for electricity, as well as the method for determining feed-in tariffs for electricity. However, with amendments to the Renewable Energy Sources Act in 2023, this responsibility was transferred to the ministry responsible for energy.

In 2023, in line with the given regulations and indicated demand, the Agency adopted and amended regulations from its jurisdiction in order to have more efficient market functioning, better protection of final customers and other market participants.

2.2 Electricity market development

Unbundling of the operator

The unbundling of the electricity transmission and distribution system operator, as natural monopolies, from energy entities performing production and supply as market activities is one of the most important tasks in the market reform of the sector. Equal right of access to network systems is thereby provided for all market participants.

The following entities are appointed to perform electricity transmission and distribution on the territory of the Republic of Serbia:

- *Elektromreža Srbije* JSC, Belgrade (*EMS* JSC), for electricity transmission and transmission system operation, 100% state-owned, corporatized since 2016 and operates as closed joint stock company and
- *Elektrodistribucija Srbije* LLC *Belgrade (Elektrodistribucija Srbije*), for electricity distribution and distribution system operation is 100% state-owned. Until March 31, 2021, this activity was performed by PE *EPS Distribucija* LLC, Belgrade.

EMS JSC is the Transmission System Operator (TSO) since it is licenced for transmission and transmission system operation, while *Elektrodistribucija Srbije* is the Distribution System Operator (DSO) since it holds a licence for distribution and distribution system operation.

The compliance with the conditions regarding the transmission system ownership unbundling model which is prescribed by the Law is established within the certification procedure executed by the Agency. The ruling legal solution implies that only after a legal person is certified as a transmission system operator, the person may submit an application for the issuance of an energy licence for transmission and transmission system operation. In line with the Law, this legal person is appointed as the electricity transmission system operator by the issuance of the licence.

In line with the certification procedure prescribed by the Law, *EMS* JSC was awarded with the final certificate as the electricity transmission system operator issued by the adoption of a Decision of the Agency Council following the preliminary certification and the Opinion of the Energy Community Secretariat.

Elektrodistribucija Srbije was awarded with the licence for distribution and distribution system operation and they perform this activity since April 1, 2021.

EMS JSC and *Elektrodistribucija Srbije* became the owners of the system within which they perform their activities. *EMS* JSC and *Elektrodistribucija Srbije* proved within the certification procedure and licence issuance procedure, i.e. licence issuance that there is a legal ground for them to use power facilities which serve for this energy activity.

In July 2023, the Law on Amendments and Supplements to the Energy Act ("Official Gazette of RS", No. 62/23) was adopted, which began to be applied on November 1, 2023. This law established the Republic Commission for Energy Networks as an independent body of the Republic of Serbia for the control of the electricity transmission system operator, whose founder

is the Republic of Serbia. The Commission conducts activities related to the transmission and management of the electricity transmission system as activities of general interest.

The same law repealed provisions of the Law on Ministries ("Official Gazette of RS" No. 128/20 and 116/22), under which the Ministry responsible for economy affairs previously performed state administration tasks related to oversight and preparation of proposals for acts concerning the appointment and dismissal of management bodies and representatives of capital in EMS a.d.

Electricity consumption

In 2023, 37.68 TWh of electricity were produced in Serbia, while gross electricity consumption amounted to 34.54 TWh. Final customers consumption amounted to 30.02 TWh, while the remaining quantities were used for the power plants operations, pumping within the pumped-storage hydro power plant and pumping facility and for recovery of electricity losses in electricity transmission and distribution networks.

According to electricity suppliers' data, in 2023, Serbia imported 6.1 TWh, which is 0.1 TWh less than the previous year, while exports amounted to 8 TWh, an increase of 4.4 TWh compared to 2022. Both imports and exports were significant throughout the year. Favourable hydrological conditions and mild winter allowed for substantial exports even during the winter season.

The highest daily gross consumption in Serbia excluding APKM was recorded on February 7, 2023, reaching 123,924 MWh. On February 8, 2023, at 10 o'clock, the maximum hourly load reached 5,581 MW.

Wholesale

In 2023, suppliers mainly traded between themselves in the wholesale electricity market because there are no big independent producers who would offer electricity since big wind parks as privileged producers sell electricity to *EPS* JSC which is obliged to purchase this energy at feed-in tariffs as the guaranteed supplier. The suppliers' activity in the open market is the most intensive in the field of cross-border exchange, mostly with the purpose of transit via Serbia which is dominant due to central geographic position of the power system of Serbia in the region. In 2023, it amounted to around 11.7 TWh. The right to nominate working schedules based on a relevant contract signed with *EMS* JSC in 2023 was awarded to 54 electricity market players. There were 3 suppliers dealing with final customers supply in the open market.

The Republic of Serbia borders eight countries and considerable electricity quantities are transferred from north-east to south-west which is why there are combustions on cross-border overhead lines and why new overhead lines are planned to be constructed with the most important project which involves the plan to connect eastern and western Europe over the territory of Serbia by the construction of 400 kV line (TransBalkans Corridor project which was initiated by the construction of a section Pančevo 2 – Rešica which was completed up to the border with Romania).

Organised day-ahead market

Organised day-ahead market/power exchange in Serbia – *SEEPEX a.d.* (JSC) Beograd (South-eastern European power exchange) was established on the basis of partnership between *EMS* JSC and EPEX SPOT – France as a joint stock company with the majority ownership of the Serbian side. It is licenced for organized electricity market operation. There were 45 participants registered in 2023 on an organized day-ahead electricity market/power exchange which is seventeen participants more than in 2022. 33 participants were actively involved in the trade which is ten participants more than last year.

The total amount of electricity traded in 2023 on the day-ahead organized market SEEPEX was 4,680,359 MWh, which is 46% more than in 2022. In 2023, the highest monthly trading volume on the intraday market was achieved in November, amounting to 451,086 MWh, with the daily peak reached on March 14 with a trading volume of 22,781 MWh. The lowest monthly trading volume was in January at 311,913 MWh, which is 34% higher than the minimum month of the previous year. The highest hourly price was recorded on September 12 at 8 PM, amounting to 318.3 €/MWh. The average annual base price was 103 €/MWh, which is 2.6 times lower than the previous year. The trade scale and the growth of the number of registered and active SEEPEX members increases the liquidity of the exchange and thereby facilitates the establishment of a referent wholesale price both in Serbia and in the region.

Retail

The Law enabled all final customers in Serbia to purchase electricity in the open market. Only households and small customers are entitled to guaranteed supply, i.e. supply at regulated prices. 47% of final customers' consumption is supplied at regulated prices to which households and small customers' are entitled.

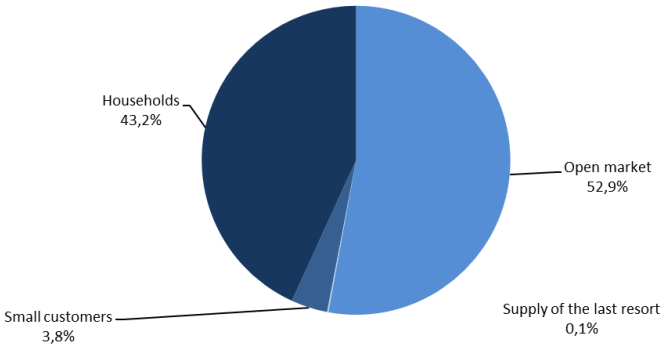

Figure 2-1: Electricity sales in the open and regulated markets in 2023

Only those customers who are not entitled to guaranteed supply purchase electricity in the open market and 53% of electricity consumed by final customers in total was sold during 2023. Out of the amount, 0.1% of electricity was consumed within the supply of the last resort regime by customers who failed to select a supplier and who used their legal right to the supply of the last resort.

At the end of 2023, there were 74 energy entities licenced for electricity supply in the open market. Out of the number, only 3 were active. *EPS* JSC is still the dominant supplier in the open market with the share of 99.92% of electricity sold to final customers in the open market and 96.96% of the total final customers' consumption (both in the open and regulated markets).

In 2023, a supplier was switched on 11.9 thousand metering points (0.31% of the total number of metering points) with consumption of 178.9 GWh which amounts to 0.6% of the total final customers' consumption.

Security of supply

In 2023, the security of supply was on the satisfactory level. Investments within several years into revitalization and modernisation of production, transmission and partly distribution capacities increase the reliability and efficiency of the power system operations.

In 2023, the indicators of the quality of continuous electricity supply, compared to the previous year, were worse both in the transmission and distribution systems. Therefore, it is necessary to analyse the reasons for this trend and, based on the results of this analysis, implement the necessary measures to reduce the number and duration of power outages.

The Strategy of the Energy Sector Development of the Republic of Serbia until 2025 with forecast until 2030 envisages average increase in electricity consumption of below 1% on the annual level. Considering the age and efficiency of existing production capacities and the fact than some of them will stop operating, it is necessary to construction new capacities. In 2023, the construction of a new thermal clock B3 in TPP Kostolac B with 350 MW capacity was continued. In 2023, drafting a new energy sector development strategy and an integrated climate plan was continued and these documents will envisage considerable construction of capacities based on renewable energy sources so as the indicated goals for the increase of the renewables share could be met to meet the electricity demand. The wind power plant Krivaca with installed capacity of 103 MW and the combined heat and power plant Vinca with installed capacity of 30.2MW were connected to the transmission system during 2023 while there were new 40 MW (from renewable and conventional sources) connected to the distribution system. At the end of 2023, there were 389 small power plants with total installed capacity of 294 MW connected to the distribution system.

2.3 Natural gas market development

Unbundling of the operator

In 2023, natural gas transmission was performed by three energy entities on the territory of Serbia: *Transportgas d.o.o.*, Novi Sad, *Yugorosgaz-Transport*, LLC Niš and *Gastrans*, LLC, Novi Sad. *Gastrans,* LLC started operating as a new transmission system operator in Serbia on January 1, 2021.

With the consent of the Government of the Republic of Serbia, PE *Srbijagas* established companies *Transportgas Srbija* LLC and *Distribucijagas* Srbija LLC which are registered in the company register as active companies. By the Conclusion of December 23, 2016, the Government of the Republic of Serbia enabled PE *Srbijagas* to continue performing the activity of general interest – transmission and transmission system operation, either independently or through the company *Transportgas Srbija* LLC until the licence is obtained. The Government also recommended to *Transportgas Srbija* LLC to take all necessary activities meant to provide the licence as soon as possible. At the end of 2019, *Transportgas Srbija* LLC started performing some of its activities as well as during most of 2020 which is why natural gas transmission was still performed by its founder PE *Srbijagas* in that period. Since October 2020, transmission system operator *Transportgas Srbija*

LLC started fully performing natural gas transmission and transmission system operation but they did not obtain the licence for the performance of this activity in 2023 either. *Distribucijagas* Srbija LLC has not started operating in 2023.

In November 2018, *Transportgas Srbija* LLC submitted a certification application in line with an independent transmission operator model. In February 2019, the Agency denied this application since this company did not submit the prescribed documentation and did not prove the compliance with the prescribed certification conditions within the legal deadline. In May 2019, *Transportgas Srbija* LLC refiled the certification application in line with ITO model, but this application was denied by the Agency in September 2019 for the same reasons. In 2021, upon the request of *Transportgas Srbija* LLC for certification in line with independent system operator model, the Council of the Agency adopted a decision No. 311.01-1/2021-C-I of March 3, 2022 on the suspension of the procedure due to the withdrawal of the file applicant. Transportgas Srbija LLC did not submit an application for certification in 2023.

Yugorosgaz-Transport, LLC *Niš* was certified as an independent system operator by the decision of the Agency Council from June 2017 with an obligation to harmonise its organization and operation in a manner providing for the compliance with the conditions related to the independence and an obligation to submit the compliance programme to the Agency as well as an evidence on the procurement of natural gas for loss recovery purposes. The deadline for the compliance with the obligation was one year long and, in case of failure, the certificate would have been revoked. From all the above given conditions, the first condition is beyond the jurisdiction of the Agency and the compliance with it depends exclusively from competent state bodies. By the Decision of the Energy Agency Council, in July 2018, *Yugorosgaz-Transport*, LLC *Niš* obtained a one-year extension of the deadline in order to comply with the certification conditions in line with independent system operator model with an obligation to inform the Agency twice a month on the activities taken to that end. Since *Yugorosgaz-Transport*, LLC *Niš* did not submit all the evidence on the compliance with the conditions prescribed by the Final Certification Decision until the end of the given deadline, in July 2019, the Agency Council adopted a decision on the revocation of the certificate from *Yugorosgaz-Transport*, LLC *Niš*. In 2023, *Yugorosgaz-Transport*, LLC did not file an application for certification either.

In 2023, the conditions regarding the control of the natural gas transmission system operator, whose founder is the Republic of Serbia, were altered with the enactment of the Law on Amendments and Supplements to the Energy Law ("Official Gazette of RS," No. 62/23), which came into effect on November 1, 2023. This law established the Republic Commission for Energy Networks as an autonomous and independent body of the Republic of Serbia responsible for controlling the natural gas transmission system operator. This operator performs the natural gas transmission and transmission system operation as activities of general interest. The law also repealed the provisions of the Law on Ministries ("Official Gazette of RS," Nos. 128/20 and 116/22) that had assigned the Ministry of Economy with tasks related to the oversight and preparation of proposals for the appointment and removal of management bodies and capital representatives in the company owned by the Republic of Serbia, which is engaged in the activity of the natural gas transmission and transmission system operation.

Acting in line with the Energy Law and with the Decision of the Energy Agency of the Republic of Serbia on the Exemption of New Natural Gas Interconnector, in June 2019, *Gastrans d.o.o.* (LLC) *Novi Sad* filed a certification application. In August 2019, by the Preliminary Decision, the Agency Council certified *Gastrans d.o.o.* (ad hoc ITO model) with conditions prescribed, with an obligation to submit all occupancy permits or to register ownership rights over transmission system facilities as well as to submit evidence proving its independent operation and independent operation over the constructed transmission system. The deadline for the compliance with the prescribed conditions was six months. Otherwise, the certificate would be revoked. On December 22, 2019, the competent body in line with obligations arising from ratified international treaties (Energy Community Secretariat) submitted its Opinion on the Preliminary Decision on Certification of *Gastrans d.o.o.* Following this, the Council of the Agency adopted the final decision thereby issuing a certificate to *Gastrans d.o.o*. as to an independent natural gas transmission operator within legal deadline on February 21, 2020. Basically, Preliminary Decision of August 2019 was confirmed by this final decision and the same obligation prescribed in the Preliminary Decision was established for *Gastrans* d.o.o in the final decision. In March 2022, *Gastrans* LLC submitted evidence to the Agency based on which the Agency adopted a decision confirming that *Gastrans* LLC complies with the certification requirements set in the act of the Agency of February 21, 2020.

Wholesale

Wholesale was dealt with only by two companies as natural gas traders which are licenced for natural gas supply - PE *Srbijagas* (which sold natural gas to public suppliers as the supplier of public suppliers) and natural gas producer *Naftna industrija Srbije a.d.* ((Petroleum Industry of Serbia) JSC, hereafter: NIS). The fact that the transmission system operator *Transportgas Srbija* still does not enforce Transmission Network Code, which regulates the access to cross-border capacities based on non-discrimination and transparency principles, represents a significant constraint for wholesale market. Therefore, capacity allocation in line with the Transmission Network Code was not realised even in 2023.

The activation of the new direction of supply from Bulgaria via the gas pipeline which is operated by the transmission system operator *Gastrans* LLC created conditions for the diversification of the source of supply. This gas pipeline became fully operable as of October 1, 2021 which is the moment when natural gas started also being transmitted from Bulgaria for the purpose of natural gas transit with Bulgaria up to the border with Hungary. In 2023, this gas pipeline was used by system users who concluded long-term contracts as well as the users with short-term capacity allocation.

The Law prescribes that the Government of the Republic of Serbia appoints the supplier of public suppliers until a competitive market is established. The supplier of public suppliers has to offer natural gas to all public suppliers (including the one within the same legal entity as the supplier itself) under the same conditions and at the same price. In 2023, PE *Srbijagas* was the supplier of public suppliers.

Retail

Total final customers' natural gas consumption to 25,444 GWh. In addition, NIS consumed 1,994 GWh from their own production quantities and, therefore, these quantities were not subject to trade in the Serbian natural gas market in 2023. There were 24 suppliers in the open market (out of 62 licensed suppliers) who dealt with retail, i.e. with the supply of final customers in 2021 while there were 31 public suppliers who also acted as natural gas distributers. Trade in the open market was dominant in the retail sphere. The natural gas sale in the open and regulated markets (households and small-scale customers are entitled to regulated prices) is indicated in Figure 2-2 and it does not include natural gas volumes produced by *NIS* to cover their own demand.

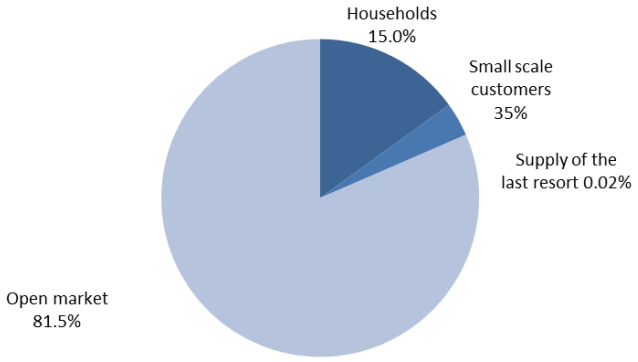

Figure 2-2: Sale of natural gas in the open and regulated markets in 2023

In 2023, around 81.5% of the total natural gas quantities which were sold to final customers were sold in the open market. The Law prescribed that the final customer who is not entitled to regulated supply can be supplied temporarily by the supplier of the last resort, if a customer loses his supplier. The Government appoints the supplier of the last resort, and, in case of 2023, the supplier of the last resort was PE *Srbijagas*. In 2023, the supply of the last resort was exercised by 2 customers with 5.2 GWh delivered to them in total, i.e. 0.02% of the total natural gas consumption in the market (without *NIS* consumption from its own production).

In 2023, the switching of supplier occurred only with 6 out of 31 distribution systems, on 45 metering points in total, with the consumption of 37.3 GWh, which amounts to 0.14% of natural gas quantities consumed in total in the market (without *NIS* consumption from its own production).

In 2023, a total of 27,437 GWh of natural gas was consumed, which is a 3% decrease compared to 2022. Consumption in households fell by 1%, in district heating plants decreased by 3% due to milder winter weather, while industrial consumption increased by 6% compared to the previous year. Domestic production of 2,043 GWh in 2023 met only 7.4% of the demand, which is roughly the same as the previous year.

Households and small customers (with annual natural gas consumption of up to 100,000 m³ with all their facilities connected to the natural gas distribution system) are entitled to be supplied by the public supplier at regulated prices if they do not select a supplier in the open market. Households and small customers have a small share in the final consumption of only 4,703 GWh i.e. around 18.5% of the total gas quantities consumed in the market (without *NIS* consumption from its own production).

Security of supply

In 2023, the security of natural gas supply was on a satisfactory level. There were sufficient quantities of natural gas to cover the whole demand of customers.

Efforts are made in Serbia in order to provide alternative supply directions. Since 2021, via the commissioning of the interconnector from the Bulgarian-Serbian border to the Serbian-Hungarian border (Gastrans gas pipeline), the security of supply was increased and the infrastructure supply standard N-1 in the Republic of Serbia was complied with. In December 2023, the construction of the Niš-Dimitrovgrad gas pipeline was completed, establishing a connection with the Bulgarian transmission system. The trial operation of this interconnector started in December 2023, which will further enhance supply security and the value of the infrastructure standard N-1 in the Republic of Serbia.

In addition, so as to increase the security of supply, it would be useful to connect with gas pipelines in other neighbouring countries; first of all, with Romania and Croatia since these countries have a developed gas infrastructure and additional options for natural gas procurement.

3. ELECTRICITY

3.1 Sector structure and capacities

3.1.1 Organisational and ownership structure of the sector

Since the adoption of the first Energy Law ("Official Gazette of RS", No. 84/04) which established basic principles for the development of electricity and natural gas markets, the organisational structure of the power sector has been constantly harmonized with the needs of the electricity market development in line with the principles of non-discrimination, efficient competition and transparency. The transformation was initiated in 2005 by unbundling a joint vertically-integrated PE *EPS* which included: electricity production, transmission, distribution and trade into a separate company PE *Elektromreža Srbije* (which was corporatized in 2016 and has been functioning as a closed joint stock company – *EMS AD*) which was established for electricity transmission and into a vertically-integrated PE *EPS* which was established for electricity production, wholesale supply and retail supply (of final customers). On July 14, 2015, *EMS* JSC established *SEEPEX* JSC Belgrade – power exchange. It was established based on partnership with EPEX SPOT. According to the Energy Law, SEEPEX has an obligation to organise and administer organised electricity market and to connect it with organised electricity markets of other countries.

The structure of the power sector at the end of 2023 is indicated in Figure 3-1.

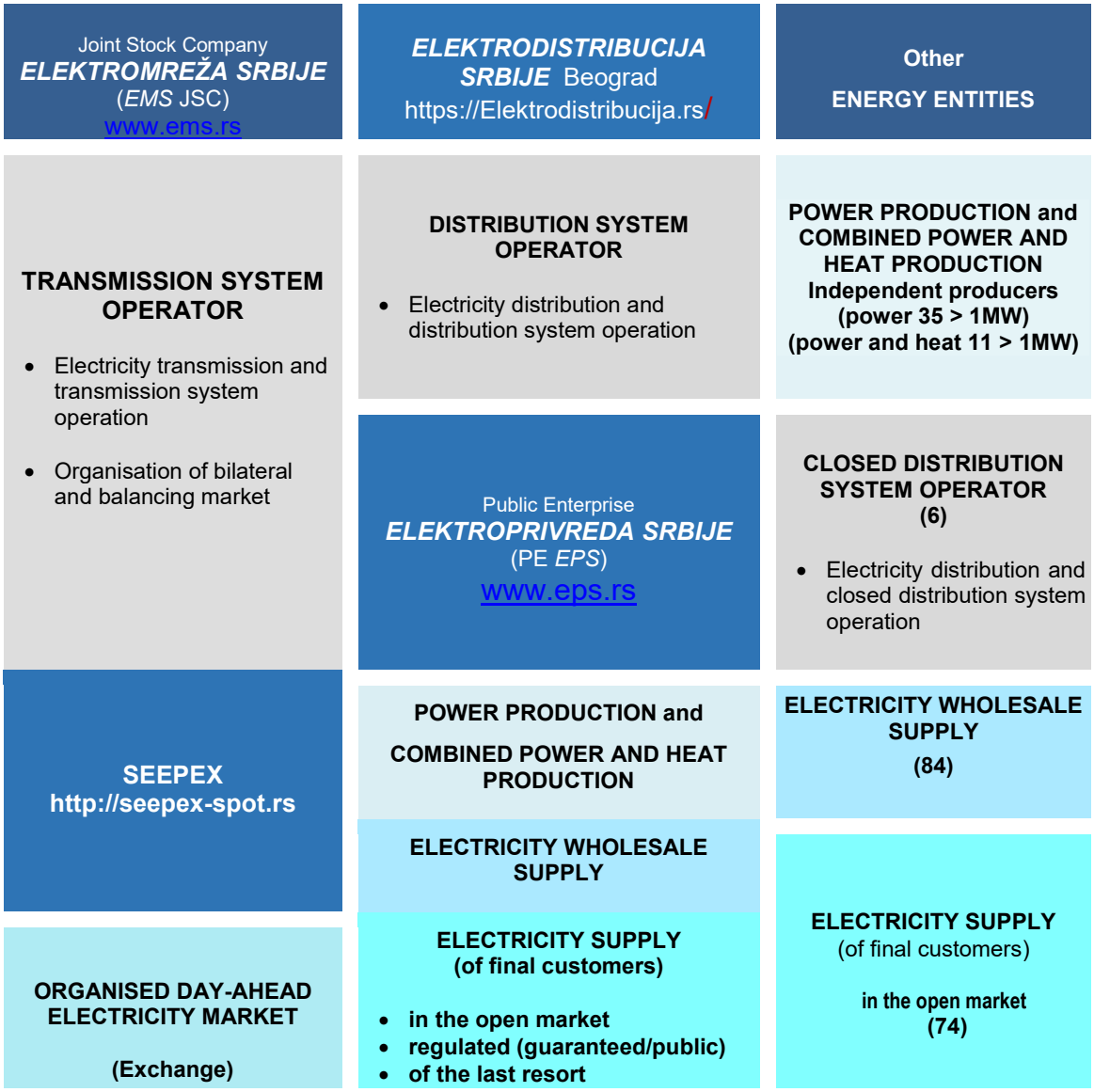

Figure 3-1: Organisational structure of the power sector at the end of 2023

Public Enterprise PE *EPS* and the joint stock company *EMS* JSC are 100% owned by the Republic of Serbia.

PE *EPS* performs the following activities: power production and combined power and heat production, electricity wholesale and retail supply. As of 2021, PE *EPS* does not perform electricity distribution any more. PE *EPS* is the biggest producer (90.9% of the total installed capacity in Serbia) and it is the dominant electricity market player. Apart from selling and purchasing in the open market, PE *EPS* is also appointed as the supplier of the last resort and the guaranteed supplier of households and small customers it supplies at regulated prices. Out of total 30.2 TWh of final customers' consumption, PE *EPS* sells 99.9% of electricity (all under regulated supply regime and over 99.8% in the open market without consumption within vertically integrated companies).

In partnership with EPEX SPOT SE, France, *EMS* JSC established an organised day-ahead electricity market (exchange) SEEPEX JSC, Belgrade (*EMS* JSC, Belgrade holds 75% of the shares while EPEX SPOT SE holds 25%).

In line with the Law, following the receipt of an opinion of the Agency, the Government of the Republic of Serbia appointed SEEPEX JSC Belgrade as the Nominated Electricity Market Operator (NEMO) in June 2022. The NEMO is appointed in the Republic of Serbia in order to implement the coupling of the day-ahead and intraday organized electricity market with neighbouring electricity markets.

In December 2022, Alpine-Adriatic Danube Power Exchange – "ADEX skupina LLC" was established as the first regional power exchange aiming at the expansion of operation to the Central and Southeast Europe. The founders of "ADEX skupine LLC" are the following: transmission system operator in Slovenia (ELES LLC with 33.4%), transmission system operator in the Republic of Serbia (EMS JSC with 33.34%) and the exchange partner EPEX SPOT (with 33.32%). "ADEX skupine LLC" has two headquarters in Belgrade and in Ljubljana.

According to the excerpt from the Central Register - Securities Depository and Clearing, at the end of 2023, the sole shareholder of SEEPEX a.d. Belgrade is ADEX Group d.o.o.

In 2023, distribution and distribution system operation on the whole territory of the Republic of Serbia was performed by the distribution system operator "*Elektrodistribucija* Srbije" LLC Beograd (DSO) which used to operate as *EPS* Distribucija LLC within PE *EPS* prior to this (until 2020). At the end of 2020, the process of harmonization of the operation of the company with the Law was completed by transferring ownership shares of PE *EPS* within "*EPS* Distribucija LLC Beograd" to the Republic of Serbia. Thereby, the conditions for this company, which is the distribution system operator, to operate independently from the vertically integrated company PE *EPS* under a new business title "*Elektrodistribucija* Srbije" LLC Beograd were created.

The independence of the DSO is extremely important since only in such a manner a DSO can offer the distribution service to all market participants in a transparent way under the same conditions without favouring PE *EPS* which performs production and/or supply and without favouring companies associated with it.

At the end of 2023, 389 small power plants with total capacity of 294 MW (out of the number, 21 of them are owned by PE *EPS* with the capacity of 39.3 MW and 368 of them are owned by independent power producers with the capacity of 254.7 MW) were connected to the distribution system. In addition to PE *EPS*, the licence for power production was held by additional 34 energy entities while 11 energy entities (PE *EPS* included) with available production facilities of capacity exceeding 1MW held the licence for combined power and heat production.

At the end of 2023, energy licence for electricity distribution and for closed distribution system operation were held by six energy entities. There is a great number of electricity suppliers licenced in Serbia. At the end of 2023, there were 76 licenced suppliers entitled to deal in wholesale and retail supply and 84 suppliers entitled only for wholesale trade. Out of the number, 54 of them were active, while there were 3 suppliers who dealt in final customers' supply in the open market.

Since 1999, a part of the power system of Serbia which is located on the territory of the Autonomous Province of Kosovo and Metohija (APKM) is under the administration of UNMIK in line with the United Nations Security Council Regulation 1244.

3.1.2 Production, transmission and distribution capacities

3.1.2.1 Production

The total net installed capacity of power plants connected to the transmission and distribution system in Serbia amounts to 8,277, without power plants on the territory of APKM (Table 3-1). These power plants delivered into the transmission and distribution system the total quantity of 37,693 GWh of electricity.

Table 3-1: Electricity production capacities in 2023 (without APKM)

Technology	Installed capacity (MW)	Delivered into the network (GWh)
Hydro power plants	3,118	13,019
Thermal power plants (coal)	3,947	21,535
Combined heat and power plants (gas, fuel oil)	562	1,787
Wind power plants	511	1,055

Solar power plants	43	33
Biomass and biogas	43	253
Other power plants	3	7
TOTAL	**8,277**	37,693

Out of the total installed capacity of 8,277 MW in power plants connected to the transmission and distribution systems, 7,933 MW, or 96.43%, is connected to the transmission system, while 294 MW, or 3.57%, is connected to the distribution system. The share of power plants generating electricity from renewable sources in the total installed capacity is 45.16%.

The structure of production capacities, excluding the power plants on the territory of APKM is given in Figure 3-2. The share of the capacities within thermal power plants (TPP) amounts to 48%, of combined heat and power plants (CHPs) amounts to 6.8%, hydro power plants (HPPs) – 37.9 % connected to the transmission system (one of them is a pumped-storage HPP with 2x307 MW capacity connected to the transmission system, which is very important for system operation, apart from covering an important energy share). The share of wind power plants (WPP) is 6.2%, the share of solar power plants (SPP) is 0.5% (all SPPs are connected to the distribution system), and biomass and biogas plants together also account for 0.5% (these plants are all connected to the distribution system). The share of other power plants was 0.04% (these were gas power plants connected to the distribution system in 2023).

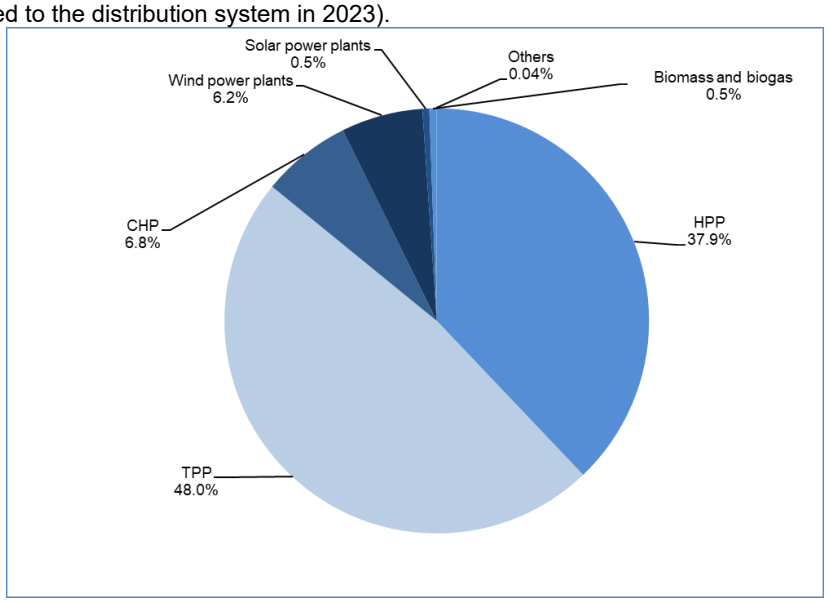

Figure 3-2: Production capacity structure in 2023 (without APKM)

Table 3-2: Power production capacities connected to the transmission system in 2023 (without APKM)

Power plant type	Number of power plants	Installed capacity MW	Delivered to network MWh
Hydro power plants	14	2,986	12,525,652
Run-of-river hydro power plants	5	2,006	10,888,828
Storage hydro power plants	9	979	1,636,824
Thermal power plants	7	3,947	21,535,214
CHPs	4	523	1,575,722
Wind power plants	5	477	985,261
Solar power plants	0	0	0
Other power plants	0	0	0
TOTAL	30	7,933	36,621,849

Table 3-3: Power production capacities connected to the distribution system in 2023 (without APKM)

Power plant type	Number of power plants	Installed capacity MW	Delivered to network MWh
Small hydro power plants	163	132	494,142
Biomass-fired power plants	3	4	26,097
Biogas-fired power plants	37	39	227,621
Power plants fired by landfill gas and gas from plants for treatment of public utility waste water	0	0	0
Wind-fired power plants	5	34	70,127
Solar power plants	164	43	33,355
Solar power plants on ground	28	36	27,434
Solar power plants on facilities	136	7	5,921
Geothermal energy-fired power plants	0	0	0
Combined production fossil fuels-fired power plants	15	39	212,205
Waste-fired power plants	0	0	0
Other power plants	2	3	7,913
TOTAL	**389**	294	1,071,459

In addition to EPS JSC, which is the largest and dominant electricity producer, there were 34 other energy entities holding a license for electricity production at the end of 2023, totalling 35. Additionally, there were 10 energy entities with a combined license for electricity and heat production, making a total of 11, which operate small production facilities connected to the distribution network.

Within EPS JSC, the dominant electricity producer, the installed capacity is as follows: 3,947 MW in lignite-fired thermal power plants, 2,986 MW in hydro power plants, 304 MW in natural gas or oil-fired thermal power plants, 39 MW in 21 small power plants (1 solar power plant and 20 hydro power plants) connected to the distribution system.

In addition to the generating capacities of EPS JSC, other producers' capacities are connected to the transmission and distribution networks. In 2023, the Krivača wind farm with an installed capacity of 103 MW and the Vinča thermal power plant with an installed capacity of 30.2 MW were connected to the transmission network. By the end of 2023, the total installed capacity of other producers connected to the transmission network was 696 MW, comprising 477 MW in wind farms and 219 MW in thermal power plants. On the distribution network, by the end of 2023, there were 368 small power plants of other producers with a total installed capacity of 255 MW.

Among all licensed other producers, the largest are: GAZPROM ENERGOHOLDING SERBIA TE-TO PANČEVO with a thermal power plant of 197 MW, ELECTRAWINDS K-WIND d.o.o. with the Kovačiica wind farm of 104.5 MW, MK-FINTEL WIND AD with the Košava wind farm of 69 MW, Elicio Ali VE d.o.o. with the Alibunar wind farm of 42 MW, Naftna Industrija Srbije a.d. with an installed capacity of 11.94 MW across 9 facilities, Vetropark Kula d.o.o. with a wind farm of 9.9 MW, JKP Novosadska Toplana with a combined production facility of 9.98 MW, ELICIO MALI WF d.o.o. with the Alibunar wind farm of 8 MW.

3.1.2.2 Transmission

The transmission system, without a part of it on APKM, includes 36 transformer stations (TS) of voltage level of 400/x and 220/x kV/kV with total installed capacity of 16,985 MVA (28 of them with total installed capacity of 15,931 MVA owned by *EMS* JSC), 25 switching stations of voltage 400, 220 and 110 kV (17 of them owned by *EMS* JSC) and lines of voltage 400, 220 and 110 kV with total length of 10,248 km (10,079 km of lines owned by *EMS* JSC). Compared to 2022, there was no increase in capacity in the transmission system of EMS a.d., but the number of substations increased by two due to the connection of the Vinča thermal power plant and the Krivača wind farm to the transmission system at the 110 kV voltage level. In addition, four TSs with voltage level of 110/x kV/kV are owned by *EMS* AD: TS 110/35 kV/kV Beograd 4, which will become a part of TS 220/110/35 kV/kV/kV Beograd 17 within the reconstruction process, 400/220 kV/kV in Obrenovac, TS 110/35 kV/kV Sevojno and TS 110/6 kV/kV Obrenovac which serves to cover its own demand and the demand of TENT A thermal power plant.

The process of transfer of overhead lines and cables of 110 kV between *EMS* JSC and PE *EPS* which was initiated in line with the Law in 2013 is still ongoing. The procedure of taking over remaining overhead lines and cables of 110 kV voltage level which are still owned by DSO is continued and it is expected to be completed in 2024.

The transmission system of *EMS* JSC is connected with neighbouring power systems via 23 interconnectors of 400, 220 and 110 kV and 22 of them are active.

Table 3-4: Data on the transmission system of *EMS* JSC at the end of 2023 (without APKM)

Transmission system element	Unit	

Network length, total	km	10,079
400 kV – network length	km	1,871
220 kV – network length	km	1,769
110 kV – network length (overhead lines and cables)	km	6,438
Number of transformers (including TS 110/x kV/kV)		76
Number of transformer stations and switchgear plants (including 110 kV voltage level)		49
Number of (active) interconnections		23 (22)

3.1.2.3 Distribution

The independent distribution system operator *Elektrodistribucija Srbije* LLC performed electricity distribution and distribution system operation on the territory of the Republic of Serbia without APKM since April 1, 2021 when it was established. The distribution system, without the territory of APKM, includes 37,947 transformer stations with total installed capacity of 35,168 MVA and 172,789 km of distribution lines of voltage level of 110, 35, 20, 10 and 0.4 kV, via which electricity is distributed to final customers.

There are 36,750 transformer stations owned by DSO with total installed capacity of 31,667 MVA and 167,296 km of distribution lines of all voltage levels. Their structure is indicated in Table 3-5. In line with the legal obligation, transformer stations of 110/x kV/kV were taken over from *EMS* JSC. As far as the lines of 110 kV, there is only the remaining overhead lines and cables to be transferred to *EMS* JSC.

Table 3-5: Length of lines owned by DSO at the end of 2023 (without APKM)

km

Voltage level	Data for distribution areas					Total DSO
	Novi Sad	Beograd	Kraljevo	Niš	Kragujevac	
110 kV	0	6	0	0	2	8
35 kV	1,034	1,100	2,217	1,831	775	6,956
20 kV	9,129	23	1,718	0	0	10,870
10 kV	387	7,951	12,069	9,671	4,339	34,417
0.4 kV	14,362	21,368	45,340	21,291	12,685	115,045
Total	**24,912**	**30,448**	**61,344**	**32,792**	**17,801**	**167,296**

3.2 Consumption and generation

Final customers' electricity consumption (without power plants' demand for production purposes) amounted to 30.2 tWh which is by 0.2 TWh lower than in 2022.

Over the past decade, JP EPS, as the dominant producer, achieved its highest electricity production in 2013 with 37.5 TWh. In 2023, JP EPS produced about 34.6 TWh of electricity from its generating capacities, which is an increase of approximately 3.6 TWh compared to 2022. Production in coal-fired thermal power plants was 21.54 TWh, representing an increase of about 0.12 TWh, or 0.6%, compared to the previous year. Production in hydroelectric power plants was higher by 3.6 TWh, or 40%, compared to 2022. JP EPS's thermal power plants operated during the winter period in 2023—namely in January, February, March, October, November, and December—and produced about 526 GWh, which is 30% less than in 2022. On the distribution network, 21 power plants owned by JP EPS produced a total of 133 GWh, an increase of 89% compared to 2022.

Production by other producers has been increasing year by year. Other producers include power plants connected to the distribution network, of which there were 368 in 2023, generating a total of about 938 GWh of electricity. In addition to these distribution-connected plants, other producers include five wind farms connected to the transmission network and two thermal power plants (Pančevo and Vinča), also connected to the transmission network. These five wind farms produced about 985 GWh of electricity, which is approximately 12% more than in 2022. The Pančevo and Vinča thermal power plants, which started operations in 2022, together produced around 1,050 GWh in 2023.

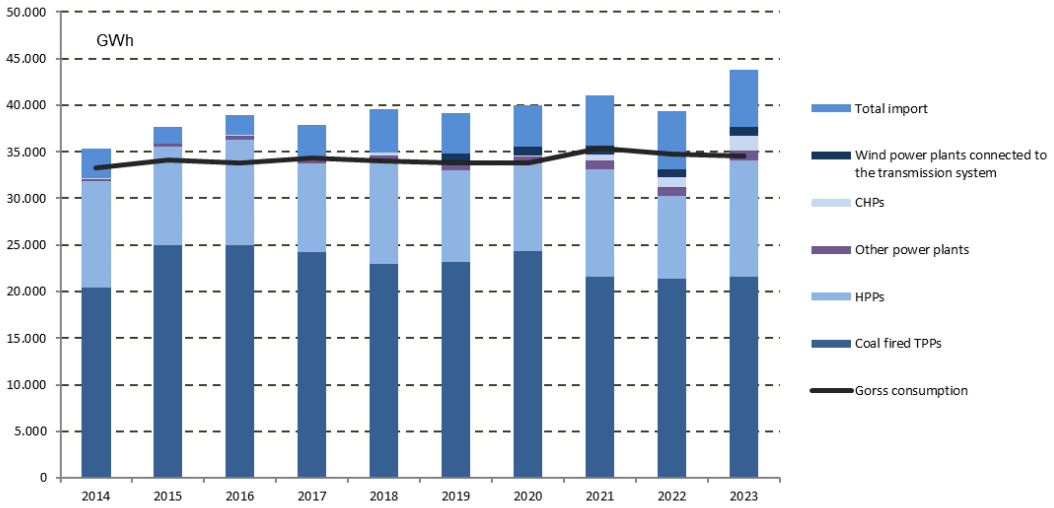

Figure 3-3: Production, import and gross consumption in Serbia in 2023 (without APKM)

In 2023, the total electricity production in power plants in the Republic of Serbia was 37,693 GWh. Of this, coal-fired thermal power plants produced 57.13%, hydroelectric power plants 34.54%, thermal power plants (district heating) 4.74%, wind farms 2.8%, solar power plants 0.09%, biomass and biogas plants 0.67%, and other power plants (small gas plants connected to the distribution system) produced 0.02% of the total electricity. The share of electricity produced from renewable energy sources (RES) relative to the total electricity produced in 2023 was 38.10%.

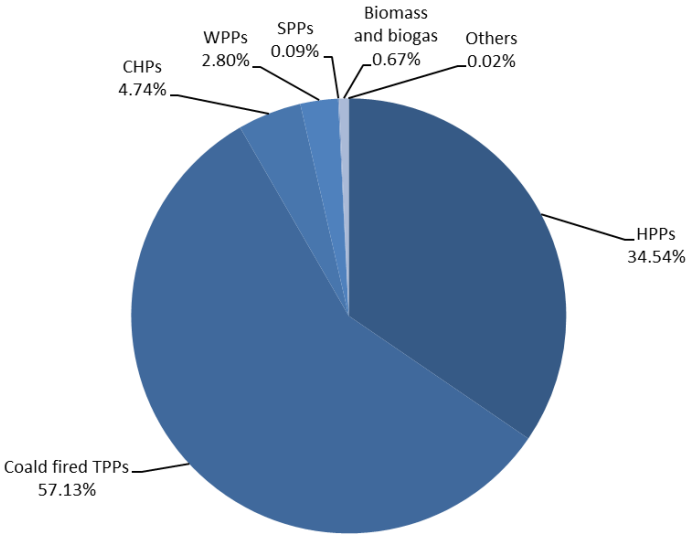

Figure 3-4: Generation structure in 2023 (without APKM)

Table 3-6: Electricity production and consumption in 2014 – 2023 (without APKM)

GWh

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
GENERATION										
Hydro power plants	11,366	10,529	11,227	9,477	11,031	9,884	9,419	11,587	8,893	12,526
Coal fired thermal power plants	20,455	25,017	25,016	24,240	22,954	23,169	24,331	21,537	21,413	21,535
Combined heat and power plants	63	45	90	185	238	337	192	630	1,058	1,576
Wind PPs connected to trans.sys.					85	830	905	1,004	876	985
Other power plants	267	321	448	538	642	612	693	898	872	1,071

Total generation	**32,151**	**35,912**	**36,781**	**34,441**	**34,950**	**34,832**	**35,540**	**35,656**	**33,112**	**37,693**
Other (UNMIK)	0	15	69	143	94	12	3	0	11	0
EPS' and of suppliers' import for the purpose of trade in Serbia	3,180	1,732	2,149	3,397	4,582	4,280	4,444	5,444	6,198	6,099
TOTAL AVAILABLE QUANTITY	**35,331**	**37,659**	**39,075**	**37,981**	**39,626**	**39,124**	**39,987**	**41,100**	**39,321**	**43,792**
EPS' and suppliers' export – of power produced and purchased in Serbia	1,021	2,142	3,696	2,186	4,246	3,940	4,708	4,792	3,385	7,992
Pumping	902	1,102	1,034	944	1,070	1,102	1,082	961	1,077	978
Other (UNMIK)	180	300	445	458	313	275	337	52	47	222
Gross consumption	**33,228**	**34,115**	**33,825**	**34,320**	**33,997**	**33,807**	**33,853**	**35,217**	**34,789**	**34,541**
Transmission network losses	948	932	892	852	868	806	798	845	802	926
Distribution network losses	4,215	4,236	3,917	3,953	3,664	3,527	3,587	3,636	3,383	3,202
Total losses	**5,163**	**5,168**	**4,808**	**4,805**	**4,532**	**4,333**	**4,385**	**4,481**	**4,185**	**4,128**
Losses to gross consumption ratio	15.5%	15.1%	14.1%	13.9%	13.3%	12.8%	13.0%	12.7%	12.0%	12.0%
Final consumption *	**28,065**	**28,947**	**29,016**	**29,515**	**29,465**	**29,474**	**29,468**	**30,862**	**30,604**	**30,413**

***** *In comparison to final consumption given in the balance sheet of the Statistical Office of the Republic of Serbia, final consumption in this Report also includes electricity consumption in all energy sectors, including energy purchased by power plants for production purposes.*

Table 3-7: Share of electricity production from RES in production and gross electricity consumption

Share of electricity production from RES in production and gross electricity consumption					
	2019	**2020**	**2021**	**2022**	**2023**
Production of electricity from RES	11,170	10,871	13,255	10,402	14,362
Total electricity production	34,832	35,540	35,656	33,112	37,693
Gross electricity consumption	33,807	33,853	35,343	34,789	34,541
Share of electricity production from RES in total electricity production	**32.07%**	**30.59%**	**37.17%**	**31.41%**	**38.10%**
Share of electricity production from RES in gross electricity consumption	**33.04%**	**32.11%**	**37.50%**	**29.90%**	**41.58%**

3.3 Regulation of the transmission system operator

The joint stock company *EMS* JSC is the transmission system operator (TSO) in the Republic of Serbia. It is responsible for electricity transmission and transmission system operation as well as for organisation and administration of electricity bilateral and balancing market. The responsibilities of the transmission system operator are regulated by the Law in detail, i.e. the transmission system operator is obliged to provide: safe, reliable and secure operation of the transmission system, transmission system development, adequate transmission capacity for the purpose of security of supply, quality of electricity delivery; non-discriminatory and transparent access to the system, system balancing, accuracy and reliability of electricity metering on points of delivery into and from the transmission system, etc.

The most important activities of the transmission system operator in 2023 included the following:

- drafting three-year transmission system investment plan;
- drafting amendments to the Transmission Network Code, drafting Rules on Connection to Transmission System and Procedures for Connection to Transmission System in order to harmonise it with the Law and an obligation to implement European network codes which was assumed under the Energy Community;
- adoption of Rules on Electricity Market Operations which are harmonised with the Law;
- adoption of the rules for the cross-border transmission capacities allocation in 2023, bilateral rules with the transmission system operators of Hungary, Romania, Bulgaria, Macedonia, Bosnia and Herzegovina, Croatia and Montenegro;
- procurement of energy for the recovery of transmission network losses;
- system services contracting;
- monitoring security of supply and submission of the data which are to be incorporated into the report on security of energy supply to the ministry in charge of energy;

- setting electricity prices for the purpose of system balancing, in line with the Electricity Market Rules and regular publication of the data on active balancing energy and the settlement price;
- collecting and publishing the data and information related to electricity market transparency and monitoring;
- exchanging information necessary for safe and secure operations of the system with other system operators;
- activities related to the issuance of guarantees of origin;
- activities related to the transfer of remaining transformer station 110/x kV/kV to the distribution system operator *EPS Distribucija* and takeover of remaining 110 kV overhead lines and cable lines;
- submission of the data and documentation necessary for monitoring transmission system operator's operations and price regulation to the Agency and
- other activities which improve the security, efficiency and transparency in the operations of the transmission system and market functioning.

Transmission Network Code

Transmission Network Code regulates technical aspects of transmission network operations and relations between *EMS* JSC as the transmission system operator and system users. The Code is available on websites of both *EMS* JSC and the Agency. The enforcement of the Network Code began in May 2008, upon the approval of the Council of the Agency of the first draft of the Code. Upon an amendment in December 2011, Code was adopted in July 2014. Following the adoption of the new Energy Law that year, on the session held on November 3, 2015, the Agency Council adopted a decision on the approval of the Transmission Network Code harmonised with this Law. During 2017, basic amendments were made to the Code due to corporatisation of the public enterprise and its transfer into closed joint stock company. Id mid December 2017, the Agency Council approved the new Code. Simultaneously, amendments to the Code were in preparation in order to harmonise it with European network codes, guidelines and instructions. In the first half of 2018, *EMS* JSC prepared a Code draft which was under public consultation from June 4 till June 29, 2018. Taking into account comments from the public consultation, *EMS* JSC prepared a new Code draft which was adopted by the *EMS* JSC Assembly on the session held on December 27, 2018. The draft was submitted to the Agency for approval purposes. Upon the analysis of the submitted Code draft, the Agency Council adopted a decision to require certain Code amendments. Only after amendments were made, the proposed Code was approved. In April 2020, the Council of the Agency approved a new draft of the Code which was prepared by *EMS* AD in order to harmonise it with technical requirements arising from European network connection codes, with requirements for system operation under regular and emergency circumstances with mandatory technical acts of ENTSO-E Association (European Network of Transmission System Operators for Electricity) and with a new concept of technical operation system of *EMS* JSC. In November 2023, the Agency approved the new Transmission System Operating Rules. The main reason for changing the existing Rules was the amendment to the Energy Law, which introduced significant changes to the connection process and created the legal basis for the issuance of three acts related to connections: the Transmission System Operating Rules, the Rules for Connecting Facilities to the Transmission System, and the Procedure for Connecting to the Transmission System of Electric Energy. In addition to aligning with the Energy Law, the Rules also needed to comply with the Renewable Energy Sources Usage Law and be more closely aligned with European grid rules (adapted EU regulations) for system operation and emergency conditions, the operational agreement for the synchronous area of Continental Europe, specifically with the Regulation on Network Rules related to the connection of customer facilities and the Regulation on Network Rules related to the connection of generating units. During the preparation of these acts, the Regulation on the Conditions for Delivery and Supply of Electric Energy was also adopted and came into effect in October 2023. This Regulation, among other things, regulates the conditions for issuing connection approvals to the transmission system, the conditions for changing technical conditions at the connection point, and the approved capacity.

3.3.1 Unbundling of the Transmission System Operator

A very important element of market reforms was achieved by unbundling network activity – electricity transmission as natural monopoly from production and supply which are market activities.

Since 2005, the transmission system operator - PE *Elektromreža Srbije* has been an independent legal entity, legally and functionally unbundled from energy entities operating in the field of power production and supply. In 2016, this public enterprise was corporativised and since that moment, it has been functioning as a closed joint stock company.

In line with the EU regulations, the 2014 Law established the model of the so-called ownership unbundling of the transmission system operator and the deadlines for its implementation. In line with the prescribed model, the independence of the transmission system operator is realised by not having the same person or persons authorised to exercise direct or indirect control over energy entities performing production or supply and over the transmissions system operator at the same time. In addition, this(ese) person(s) is(are) not simultaneously authorised to be a member(s) or to appoint the members of the management body within the transmission system operator and energy entities dealing in electricity production or supply. In case when this person is actually the Republic of Serbia or a state body, the control over the transmission system operator and over energy entities in charge of production and supply, the control over the transmission system operator and over entities in charge of production and supply cannot be exercised by the same state body. When separate state bodies exercise the control, these bodies cannot be controlled by the same third party.

The compliance with the conditions for the implementation of the ownership model of unbundling of the transmission system operator which is prescribed by the law is examined within the certification procedure which is implemented by the Agency.

The ruling legal ground imposes that only after a legal person is certified as a transmission system operator, the person may submit an application for the issuance of an energy licence for transmission and transmission system operation to the Agency. In line with the Law, this legal person is appointed as an electricity transmission system operator by the issuance of the licence.

Acting within a deadline prescribed by the law, in October 2016, *EMS* JSC submitted a certification application to the Agency. Following the certification procedure which implies the adoption of a preliminary decision on certification in the first place (by the Decision of the Agency Council of January 26, 2017, when *EMS* JSC was preliminarily certified as an electricity transmission system operator), obtaining the opinion of the Energy Community Secretariat (the Energy Community Secretariat submitted its opinion to the Agency on June 16, 2017), by the Decision of the Agency Council of August 4, 2017, in line with the Energy Law and the Rulebook for Energy Licence and Certification, a final certificate was issued to the Joint Stock Company "Elektromreža Srbije" Beograd as to an electricity transmission system operator.

Following the adoption of the certification decision, on December 8, 2017, the Agency Council issued a licence to the Joint Stock Company "Elektromreža Srbije" Beograd for the performance of electricity transmission and transmission system operation. Acting in line with the jurisdiction arising from the Energy Law, on September 20, 2017, the Energy Community Secretariat submitted a request for the initiation of a certification procedure to assess the compliance of *EMS* JSC with the unbundling criteria again.

Considering the given request, following the issuance of an opinion of the Ministry of Mining and Energy, Ministry of Economy, Ministry of State Administration and Local Self-Government and the Republic Legislation Secretariat stating that the ministries are independent in their activities and working within the Constitution of the Republic of Serbia and based on it, based on the law and other regulations and general acts and stating that one ministry cannot supervise the work of another ministry, on April 26, 2018, the Agency informed the Energy Community Secretariat that the Agency considered the final decision valid and that the request for the initiation of a new certification procedure for *EMS* JSC was not justified. It was not justified since there is neither mutual influence in the work of the ministry in charge of economic affairs and the ministry in charge of energy issues, nor the Government over the work of ministries, and therefore, there is no unique control over the transmission system operator on one hand and over energy entities operating in the field of electricity production and supply on the other hand.

To ensure full separation of the system operator, the Law on Amendments and Supplements to the Energy Law ("Official Gazette of RS", No. 62/23) was adopted in July 2023 and began to be applied on November 1, 2023. This law established the Republic Commission for Energy Networks as an independent and autonomous body of the Republic of Serbia responsible for overseeing the electricity transmission system operator, which is owned by the Republic of Serbia and performs the energy activity of transmission and transmission system operation as a matter of public interest. The same law repealed the provisions of the Law on Ministries ("Official Gazette of RS" No. 128/20 and 116/22) that had previously assigned the Ministry of Economy with the administrative responsibilities related to oversight and preparation of proposals for the appointment and dismissal of management bodies and capital representatives in EMS JSC.

3.3.2 Price regulation

3.3.2.1 Costs of connection to the system

The costs of connection to the system are set by the TSO on the basis of elements given in the connection application and the Methodology for Setting Costs of Connection to the Electricity Transmission and Distribution Systems ("Official Gazette of RS", No. 109/15; valid as of 01/03/2016) which is adopted by the Agency. The Methodology defines types of costs: collection of documentation, procurement and instalment of equipment and material, works, the manner of calculation of all costs. In addition, the TSO is obliged to adopt certain standards and to use market prices, i.e. prices of work and services when setting costs of connection in their decision on connection.

Since connections to the transmission system cannot be standardized and since each of them is a project of its own, TSO is obliged to comply with principles of transparency and non-discrimination and to inform the applicant, upon his/her request, on the documents which serve as the basis for setting the level of connection costs and the method for setting these costs.

Except for paying for the construction of the connection, the applicant is obliged to pay defined set of costs arising from the connection of the applicant's facility to the system.

TSO is the investor, i.e. the owner of the constructed facility (of the connection line, metering equipment and other equipment, up to the metering point within the customer's facility).

In line with the Law, *EMS* JSC also adopted the Procedure for Connection of Facilities to Transmission System which was approved by the Agency. This procedure regulates the schedule of TSO's activities and the connection applicant in more detail and the deadlines in the procedure of facility connection to the transmission system.

3.3.2.2 Use-of-system charge

Upon the positive assessment of the Council of the Agency and the approval of the Government of the Republic of Serbia, regulated electricity transmission use-of-system charges were applied on January 1, 2008 for the first time. Since then, they have been modified eight times. The last time they were modified was on October 1, 2021. In 2023, charges were not

modified. The trend of the annual level of approved electricity transmission use-of-system charges (VAT and duties free) are given in the table below:

Table 3-8: Trend of annual level of average approved transmission use-of-system charges[2]

RSD/kWh

	Annual level of approved charge				
	as of 01/03/2013	**as of 01/03/2017**	**as of 01/112019**	**as of 01/02/2021**	**as of 01/10/2021**
Total electricity transmission use-of-system charge	0.44	0.49	0.50	0.56	0.62
Net electricity transmission use-of-system charge *	0.18	0.28	0.29	0.34	0.35

** Net electricity transmission use-of-system charge is calculated by reducing the total maximum allowed revenue by system services costs and loss recoveries in the transmission grid and dividing it with the total annual delivered electricity quantities.*

The charges which were valid in 2023 are listed in Table 3-9.

Table 3-9: Transmission use-of-system charges which were valid in 2023

RSD

Tariff element	Calculation element	Unit	Charge as of 01/10/2021
Power	Accounting power	kW	59.3603
	Extra power	kW	237.4412
Active energy	Higher day-time	kWh	0.4742
	Lower day-time	kWh	0.2371
Reactive energy	Reactive energy	kvarh	0.2863
	Extra reactive energy	kvarh	0.5727

In 2023, the Agency Council made a decision to amend the Methodology for Determining the Access Price to the Electricity Transmission System. The amendment specified that Section VIII.1, Paragraph 2, and Section VIII.3, Paragraph 2, no longer apply to the Low Voltage Consumption category. The current transmission use-of-system charge is available on the Agency website (www.aers.rs).

In 2023, by the application of ruling charges to actual tariff elements, average transmission use-of-system charge (VAT and duties free) was realised. It amounted to 0.62 RSD/kWh.

Table 3-10: Average transmission use-of-system charges

RSD /kWh

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Realised transmission use-of-system charges	0.42	0.43	0.43	0.43	0.48	0.49	0.49	0.50	0.56	0.62	0.62

Transmission use-of-system charges (VAT and duties free) in European countries are given in line with 2023 EUROSTAT data in the Figure 3-5.

[2] Terms related to prices used in the Report include the annual price level and average price. The annual price level represents the quotient of the revenue arising by the application of ruling tariffs on a certain date to annual quantities and other tariff elements used in the process of tariff approval. The average price represents the quotient of the realized revenue and realized quantities over a period of one year. If there were no changes in prices over a one-year period, these two prices should be similar, i.e. there should be only small difference between realized quantities and tariff elements compared to the planned ones which are used in the process of price approval.

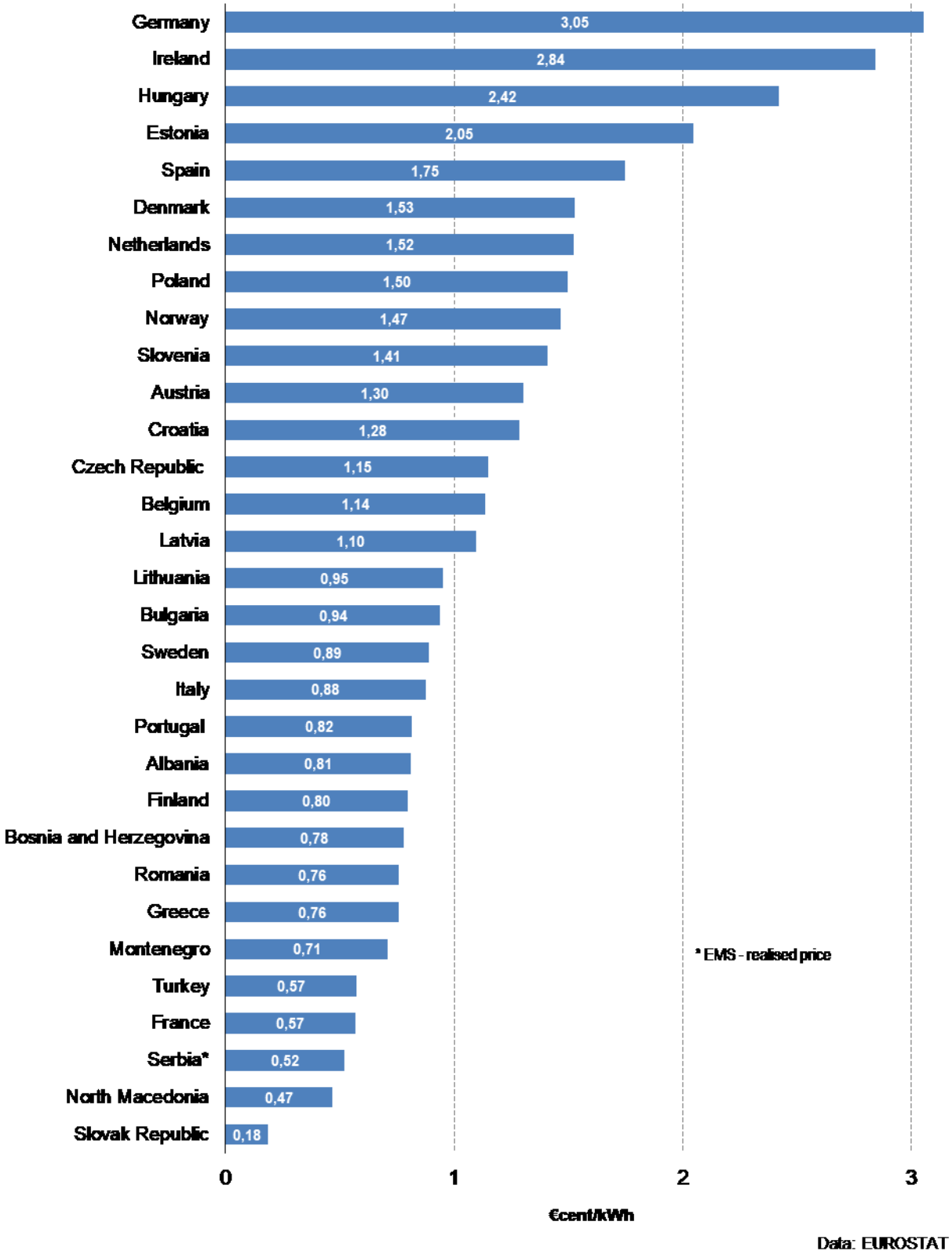

Figure 3-5: Transmission use-of-system charge (€/MWh) in 2023

3.3.2.3 Prices of secondary and tertiary control reserve

The Electricity Transmission Network Code defines that the level of capacity which has to be reserved for the purpose of system service - primary control is set in line with Rules on interconnection operations, that the range of secondary control capacity amounts to 160 MW and that tertiary control capacity amounts to 300 MW for positive and 150 MW for negative reserve. It also defines that the whole reserved capacity has to be provided from production units connected to the local transmission system.

The Electricity Transmission Network Code defines the manner how production units connected to the local transmission system provide these services as well as the ability of the system operator to engage the missing capacity or procure energy for system services purposes from other electricity market participants (suppliers and wholesale suppliers) or from the operator of another transmission system.

Usually, the Agency adopts Decision on Prices of Capacity Reserve for System Services of Secondary and Tertiary Control at the end of each calendar year. The price of these system services for 2023 were set in line with the mechanism for setting total annual cost of provision of secondary and tertiary control service which is based on setting total annual costs of construction and maintenance of replacement capacity which would be used only for the provision of these services.

The prices of 2023 capacity reserve for the purpose of secondary control were set on the level of 1,146 RSD/MW and of tertiary control of 402 RSD/MW in case capacity was supposed to be increased. The service of tertiary control in case capacity is supposed to be reduced and primary control are free of charge.

3.3.2.4 Prices of ancillary services

Beside setting prices of system services, the Agency also sets the prices of ancillary services (voltage regulation and reactive power control and black start) which are provided to the transmission system operator by producers whose facilities are connected to the power system. For 2023, prices of ancillary services for the voltage regulation and reactive power were set in thermal power plants and combined heat and power plants amounting to 15,744 RSD/Mvar inductively and 17,143 RSD/Mvar capacitively and in hydro power plants amounting to 35,460 RSD/Mvar inductively and 33,448 RSD/Mvar capacitively. Prices for black start operation are set on the annual level as the lump sum based on total annual cost of equipment for black start in power plants used for these purposes. For 2023, they were set to the amount of RSD 9,905,496. They are billed in equal monthly instalments of RSD 825,458.

Total allowed annual levels for the provision of system and ancillary services in the last 5 years are indicated in Table 3-11.

Table 3-11: Total annual level for the provision of system and ancillary services

000 RSD

Year	2019	2020	2021	2022	2023
Total annual value	3,583,388	3,707,962	3,782,748	3,886,051	4,039,793

3.3.2.5 Prices of Non-Standard Services

The Law prescribes that in addition to providing services to customers and system users which are charged via use-of-system charge or via connection costs, upon a customer's, i.e. system user's request, the transmission system operator also provides services which are not included in the above stated prices. In addition, the operator provides services when necessary in order to remove the consequences arising from a customer's or system user's acts which are contrary to regulations. Since these services are individual and occurring from occasionally upon a customer's or system user's request, they are called non-standard services. In order to compensate the costs arising from the provision of these services, *EMS* JSC established a price list for non-standard services which was approved by the Agency Council in August 2017. The list classifies non-standard services and establishes unit prices. These prices have not been modified and, for this reason, they were applied in 2023 as well.

3.3.3 Access to cross-border capacities

3.3.3.1 Cross-border capacity allocation and combustion management

The Republic of Serbia borders with eight countries and there are twelve interconnection overhead lines (400kV and 220kV) where *EMS* JSC allocates the rights to use transmission capacities. On the Serbian-Hungarian border since 2011, Serbian-Romanian border since 2013, Serbian-Bulgarian and Serbian-Croatian since 2014, on Serbian-Bosnian and Herzegovinian border since 2014, on Serbian – North Macedonian border since 2017 and on Serbian-Montenegrin border since 2020, joint explicit auctions have been organised for the allocation of 100% of available capacity. There was no transmission capacity allocation on the border with Albania in 2023. Since 2018, Joint Auction Office S.A. from Luxembourg has been organizing coordinated cross-border capacity allocation on the Serbian – Croatian border. Since 2019, this has been the case with the Serbian – Bulgarian border as well.

Rules for the cross-border transmission capacity allocation

Being the TSO, *EMS* JSC is responsible for the allocation of rights to use available cross-border transmission capacities on interconnection lines of the Serbian power system. The mechanism for the allocation of rights to use available cross-border

transmission capacities is defined by the Transmission Network Code, the agreements between the transmission system operator of the Republic of Serbia and the transmission system operators of Hungary, Romania, Bulgaria, Bosnia and Herzegovina, Croatia, North Macedonia and Montenegro on the procedure and method of allocation of cross-border capacities and access to cross-border transmission capacities and general Rules for Available Cross-Border Transfer Capacities Allocation on Borders of Control Area of Republic of Serbia. The Agency Council approved the rules and agreements which were applicable in 2023 at the end of 2022.

Cross-border capacity allocation

Being the TSO, *EMS* JSC is responsible for the calculation, allocation and use of cross-border transmission capacities on all borders of the control area of the Republic of Serbia. More details on the cross-border capacity allocation are available on the website of the Transmission System Operator (www.ems.rs). The right to participate on cross-border capacity allocation auctions is held by market players holding licence for electricity wholesale supply or electricity supply and having a contract signed with *EMS* JSC on balancing responsibility.

Tables 3-12 and 3-13 indicate average monthly amounts of net cross-border transmission capacities (NTC) on all borders in both directions.

Table 3-12: Average monthly level of NTS for entry into Serbia in 2023

MW

Border/months	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Hun---> Ser	610	575	700	700	623	700	700	294	607	635	633	558
Rom---> Ser	500	600	550	433	590	687	489	377	440	358	510	500
Bul ---> Ser	350	350	350	332	350	233	350	344	348	365	350	350
N.Mac---> Ser	500	400	350	417	400	383	500	500	550	400	500	600
Mon---> Ser	200	200	200	200	200	200	200	200	200	200	200	200
BosHer--- Ser	450	600	416	545	300	423	481	400	430	400	500	400
Cro---> Ser	300	300	300	300	300	200	300	300	150	150	150	150

Table 3-13: Average monthly level of NTS for exit from Serbia in 2023

MW

Border/months	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Ser --->Hun	697	657	800	800	800	800	800	335	693	656	670	800
Ser --->Rom	500	600	473	473	542	693	506	500	543	523	700	584
Ser --->Bul	350	350	350	350	350	233	350	344	350	389	350	350
Ser --->N.Mac	600	550	500	333	481	500	500	574	480	500	600	600
Ser --->Mon	300	300	300	300	300	300	245	300	300	300	300	300
Ser --->BosHer	600	600	532	600	600	497	571	474	600	555	580	550
Ser --->Cro	300	300	300	300	300	200	300	300	150	150	150	150

In 2023, *EMS* JSC organised explicit auctions on cross-border transmission capacities on all borders and in all directions of the control area of the Republic of Serbia.

In 2023, *EMS* JSC organised daily explicit auctions for the allocation of 100% available capacity on the Serbian-Hungarian border charging in line with the last successful price ("marginal price") as well as intraday auctions by the application of the method „first come-first served". The Hungarian transmission system operator MAVIR ZRt. realised the allocation of available capacity on annual and monthly level, charging in line with the last successful price ("marginal price"). There were 48 registered participants on all auctions organised by *EMS* JSC.

For the allocation of 100% of available capacity on Serbian-Romanian border, *EMS* JSC organised explicit auctions charging in line with the last successful price ("marginal price"), while the Romanian transmission system operator CNTEE Transelectrica S.A. realised the allocation of the available annual and monthly capacity on daily level charging in line with the last successful price ("marginal price"), as well as on the intraday level, by organizing explicit auctions (6 4-hour sessions). There were 38 participants registered in total on all auctions organised by *EMS* JSC.

In 2023, Joint Auction Office JAO S.A. was responsible for the organisation of annual, monthly and daily explicit auctions on Serbian – Croatian and Serbian – Bulgarian border applying the "marginal price" charging method. *EMS* JSC organised available capacity allocation on intraday level on Serbian – Croatian border and Serbian – Bulgarian border by using the method „first come-first served".

In 2023, *EMS* JSC organised annual and monthly explicit auctions for the allocation of 100% of available. by method "first come-first served" capacity on Serbian-Bosnian and Herzegovinian border charging in line with the last successful price ("marginal price"), and the same method was used by the Bosnia and Herzegovina transmission system operator (NOSBIH)

which organised daily explicit auctions. NOSBIH also organised intraday auctions by using the method „first come-first served“. There were 40 registered participants in the auctions organised by *EMS* JSC.

The North Macedonian Transmission System Operator M*EPSO* organised annual and monthly explicit auctions for the allocation of 100% of available capacity on the North Macedonian border in line with the “marginal price” charging method. *EMS* JSC organised the allocation of available capacity on daily level in line with the “marginal price” charging method and on intraday level in line with “first come-first served” charging method. There were 39 participants registered in the capacity allocation organised by *EMS* JSC.

In 2023, *EMS* JSC organised annual and monthly explicit auctions for the 100% available capacity allocation on Serbian-Montenegrin border by using the method of “marginal price”, while, using the same method the transmission system operator of Montenegro (CGES) organised daily explicit auctions and organised intraday capacity allocation by using the method “first come-first served”. There were 45 participants registered in the auctions organised by *EMS* JSC.

The data on the joint annual auctions for 2023 are given in Table 3-14.

Table 3-14: Data on joint annual auctions for the allocation of cross-border transmission capacities in 2023

Border – direction	Available Cross-Border Capacity - ATC (MW)	Number of auction participants entitled to capacity	Marginal price (EUR/MWh)
Hungary – Serbia*	200	10	3.12
Serbia – Hungary*	200	10	3.89
Romania – Serbia*	250	5	2.55
Serbia – Romania	250	9	0.28
Bulgaria – Serbia**	150	9	12.55
Serbia – Bulgaria**	150	9	0.91
Croatia – Serbia**	150	8	1.51
Serbia – Croatia**	150	6	2.21
BiH - Serbia	150	9	1.56
Serbia - BiH	150	9	0.41
North Macedonia – Serbia*	100	9	4.20
Serbia – North Macedonia*	100	9	4.10
Montenegro - Serbia	100	5	10.01
Serbia – Montenegro	100	8	5.11

** Data gathered from the neighbouring transmission system operator*

*** Data gathered from the JAO S.A.*

The data on joint monthly auctions in 2023 are given in Table 3-15.

Table 3-15: Data on joint monthly auctions for the allocation of cross-border transmission capacities in 2023

Border – direction	No. of days with “0” capacity	Number of congestions/total number of auctions	Number of participants in auctions entitled to capacity (min.-max.)	Range of marginal prices in case of congestion EUR/MWh
Hungary – Serbia*	31	12 / 12	12 – 16	0.84 – 2.00
Serbia – Hungary*	31	12 / 12	14 – 20	1.25 – 6.28
Romania – Serbia*	4	25 / 28	6 – 11	0.00 – 20.00
Serbia – Romania*	4	18 / 24	4 – 9	0.00 – 0.69
Bulgaria – Serbia**	10	12 / 12	8 – 17	1.30 – 1.90
Serbia – Bulgaria**	10	12 / 12	7 – 16	0.79 – 1.89
Croatia – Serbia**	132	8 / 12	10 – 15	0.00 – 2.20
Serbia – Croatia**	132	8 / 12	8 – 15	0.00 – 3.88
BiH - Serbia	0	22 / 22	14 – 17	0.25 – 3.97
Serbia - BiH	0	22 / 22	11 – 15	0.01 – 0.15
North Macedonia – Serbia*	5	14 / 15	6 – 16	0.40 – 7.40
Serbia – North Macedonia*	5	16 / 17	7 – 17	1.10 – 4.00
Montenegro - Serbia	0	12 / 12	16 – 23	0.56 – 10.99
Serbia – Montenegro	0	16 / 16	16 – 22	2.00 – 6.59

** Data gathered from the neighbouring transmission system operator*

*** Data gathered from the JAO S.A.*

At the end of 2023, *EMS* JSC concluded agreements on the organization of common allocation/auctions for 2024 with those neighbouring transmission system operators that had them organized in 2023 as well. The Council of the Agency approved all these agreements by the end of 2023.

3.3.3.2 Annual exchange within and across the borders of control areas

The total scale of cross-border transactions in 2023 amounted to 17,621 GWh – entrance, i.e. 19,754 GWh – exit from the market area of Serbia. The scale of internal transactions[3] amounted to 24,026 GWh. Table 3-16 indicates the scale of nominated and confirmed internal and cross-border transactions in the period 2013-2023.

Table 3-16: Cross-border and internal transactions in the market area of Serbia 2013 - 2023

GWh

Year	Cross-border transactions – entry	Cross-border transactions – exit	Internal transactions
2013	10,094	13,939	11,711
2014	16,637	14,416	11,574
2015	16,165	16,910	9,835
2016	15,526	17,844	15,633
2017	19,133	17,822	15,865
2018	17,350	16,837	20,536
2019	17,331	16,868	20,788
2020	17,971	18,815	26,272
2021	17,043	16,382	22,493
2022	16,361	13,548	18,517
2023	17,621	19,754	24,026

In comparison to the previous year, in 2023, the scale of cross-border transactions increased by around 8% in the entrance and by around 17% in the exit direction. The volume of internal transactions increased by approximately 29.8% compared to the previous year. The largest increase in exports was recorded towards Romania (412%) and Bulgaria (325%), as well as towards Hungary (69%) and North Macedonia (39%). Conversely, there was a decrease in imports from Bulgaria (33%). In 2023, there was a growth in trading volumes due to Europe's exit from the energy crisis and the stabilization of electricity prices. Apart from the transactions indicated in Table 3-16, a segment of cross-border exchange was realised via island operations of distribution system of Serbia and Bosnia and Herzegovina, amounting to 4.58 GWh in direction from Serbia towards Bosnia and Herzegovina and 0.94 GWh in the opposite direction.

Table 3-17 indicates the scale of cross-border transactions for each border for 2023.

Table 3-17: Entry and exit nominated cross-border transactions for each border for 2023

GWh

Border with	Entry into Serbia	Exit from Serbia
Romania	3,238	2,546
Bulgaria	1,867	1,706
North Macedonia	1,845	3,569
Montenegro	1,099	2,277
BiH	2,810	1,534
Croatia	2,516	2,031
Hungary	4,246	6,091
On all borders	**17,621**	**19,754**

[3] Bilateral trade between two balancing responsible parties in Serbia

3.3.3.3 Use of revenue arising from the cross-border capacity allocation

In 2023, *EMS* JSC generated revenue from capacity allocation amounting to around €60.2 million in line with the following structure:

Table 3-18: Revenue from cross-border capacity allocation in 2023

Allocation	Revenue (€)
Annual	31,342,446
Monthly	17,859,261
Daily	10,968,995
Total	60,170,702

In line with the Regulation (EU) 714/2009, revenues of TSO arising from the cross-border capacity allocation are a part of the total revenue. Therefore, they were used for financing investments in the transmission system as one of sources of funds in order to maintain and increase cross-border transmission capacities in order to reduce congestion.

3.3.4 Transmitted electricity quantities

Table 3-19 indicates the transmitted electricity quantities and transmission system losses in 2023 in comparison to the quantities planned for 2023 in the balance sheet. In comparison the balance sheet planned data, transmitted energy quantities were by around 4% lower while the losses were around 13% higher than the planned ones.

Table 3-19: Basic indicators of transmission plan realisation (without APKM)

	2023		
	Balance	Realised	Real./Bal.
Entry (GWh)	43,530	41,839	96.11
Losses (GWh)	823	927	112.64
Losses (%)	1.89%	2.21%	116.93
Exit (GWh)	42,707	40,912	95.80

Realised physical electricity transit in 2023, calculated as a lower value of average hourly electricity which was withdrew into or out of the transmission system via interconnection overhead lines amounted to 5,640 GWh. The physical transit per month is indicated in table 3-20.

Table 3-20: Electricity transit by months of 2023 (physical flows)

Month	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Transit (GWh)	525	392	325	447	439	429	437	313	528	459	385	495

On a part of the system without APKM, 41,839 GWh of electricity were withdrawn in total. Out of the number, 35,637 GWh were withdrawn from hydro power plants, thermal power plants and combined heat and power production plants connected to the transmission system, 985 GWh were withdrawn from wind power plants connected to the transmission system 5,173 GWh were withdrawn from neighbouring systems. Because of the production of power plants connected to the distribution system which exceeded the demand in these parts of the distribution system, around 44.2 GWh of electricity was withdrawn from the distribution system. The greatest share of energy which was withdrawn was delivered to electricity distribution systems, final customers, neighbouring system and pumped-storage plants for pumping purposes respectively.

Table 3-21: Transmitted energy, maximum load and losses (without APKM)

	Unit	2022	2023	2023/2022
Transmitted electricity	GWh	40,708	41,839	102.78
Maximum daily gross consumption	GWh	130,179	119,721	91.97
Maximum hourly load	MW	5,935	5,396	90.92
Transmission system losses	GWh	802	927	115.59
Transmission system losses (as % of transmitted electricity)	%	1.97	2.21	112.18

In 2023, without APKM, electricity losses in the transmission system of Serbia amounted to 927 GWh, which represents 2.21% of electricity withdrawn into the transmission system. In 2023, the Transmission System Operator (*EMS* JSC) purchased electricity to cover losses on the bilateral market in line with the contract on full supply.

Electricity consumption in Serbia, but in the region as well, depends on the season. Therefore, maximum consumption is seen in wintertime at lowest temperatures or on days prior to holidays. During the first and last quarter of 2023, in Serbia, without APKM, average daily consumption which greatly depends on the average daily temperature amounted to 101,133 MWh. The highest daily gross consumption amounted to 123,924 MWh on February 7, 2023. On February 8, 2023 at 10 a.m., maximum 2022 hourly load was reached – 5,581 MW.

3.4 Regulation of the distribution system operator

On July 1, 2015, by the reorganization of PE *EPS*, a specific daughter company Distribution System Operator "*EPS Distribucija*" was established and it performed the activity of electricity distribution and distribution system operation on the territory of Serbia without APKM. As of April 1, 2021, this activity is performed by the company *"Elektrodistribucija Srbije"* LLC, (DSO). The Law regulated in detail the DSO responsibility to provide: safe and reliable distribution system operations and the quality of electricity delivery, distribution system development, non-discriminatory and transparent access to the distribution system, support to efficient market functioning, accuracy and reliability of electricity measurements on delivery points from and into the distribution system and quality of electricity delivery.

The most important activities of the distribution system operator in 2023 were as follows:

- organisational changes in order to provide for efficient operation of a single distribution system operator;
- drafting distribution system development plan and the distribution system investment plan;
- activities on metering points and accompanying equipment (connections) transfer;
- cooperation with *EMS* JSC and suppliers on the provision of data related to market functioning and balancing responsibility;
- submission of the data and documents necessary for monitoring operator's work and for the analysis of the data necessary for price regulation to the Agency;
- submission of the data which are to be incorporated into the report on security of energy supply to the ministry in charge of energy;
- procurement of energy meant for distribution grid loss recovery and
- other activities which improve the security, efficiency and transparency of the distribution system operations as well as market functioning.

The DSO had an obligation prescribed by the Law to take over metering devices, switchboards, connection lines, installations and equipment in the switchboard and other devices within the connection in the facilities of existing customers or producers since these devices and equipment are part of the distribution system by the end of 2020 but they did not comply with it. Since these devices and equipment are a part of the distribution system, amendments to the Energy Law of May 2021 prescribed that this transfer should be realised by the end of 2024.

Distribution Network Code

The Distribution Network Code regulates technical conditions for connection of customers to the system, technical and other conditions for safe operation of the distribution system and for the provision of reliable and continuous delivery of electricity to customers, procedures in case of crisis, rules on third party access to the distribution system, functional requirements and the category of measuring devices, electricity measuring method and other issues important for the operation of the distribution system. Following its establishment in the second half of 2015, The DSO started drafting the Code in the second half of 2015. In the period between July 2016 and July 2017, working teams of the DSO and the Agency were harmonizing the Code text, public consultations were organized on the Code. On the session held on July 19, 2017, the Agency Council approved the Code and it came into force on August 1, 2017. In 2018, amendments to the Code which served to remove noticed technical errors were prepared. In the beginning of 2019, the amendments were submitted to the Agency for approval. On the session held on March 1, 2019, the Agency Council approved the proposed amendments. Since then, there were no activities on the amendments to this Code but following the adoption of amendments to the energy law in May 2021 and following the adoption of decrees which regulate the connection to the distribution system which were adopted in 2022 and the decree regulating electricity delivery and supply that was adopted in October 2023 created conditions for the DSO to prepare new Network Code which will be harmonised with these acts.

3.4.1 Unbundling of DSO

By unbundling of network activity – electricity distribution as a natural monopoly from production and supply which are market activities, a very important element of market reforms is reached.

In 2020, electricity distribution on the territory of the Republic of Serbia was performed by one subsidiary company Distribution System Operator *EPS* Distribucija d.o.o. Beograd as a part of a vertically-integrated company PE *EPS*. Since the Distribution System Operator which is a part of a vertically integrated company has to be independent in terms of the legal form, organization and decision-making process from other activities which are not connected to the electricity distribution activity, via the transfer of shares of PE *EPS* to the Republic of Serbia at the end of 2020 and via the registration of a new company in early 2021, DSO started performing the activity independently without the control of PE *EPS* and this is the moment when it also starts operating under a new business title "*Elektrodistribucija* Srbije" LLC.

In line with the Law (Article 131), the independence of the distribution system operator is provided by having persons responsible for the management of the distribution system operator restricted from participation in management bodies of the vertically-integrated company which are directly or indirectly responsible for electricity production, transmission or supply, as well as by taking measures which ensure that the persons responsible for the management of the distribution system operator act in a professional manner in order to provide for their independence during work. In addition, the distribution

system operator is supposed to adopt decisions independently from the vertically-integrated company if these relate to funds necessary for the network operation, maintenance and development, as well as to current operation, i.e. decisions on the construction or upgrade within the distribution network if they comply with the approved financial plan.

Pursuant to the Law (Article 132), a Distribution System Operator which is a part of a vertically-integrated company is obliged to adopt the Compliance Programme for Non-Discriminatory Treatment which includes measures for the prevention of discriminatory behaviour, the method of monitoring the implementation of these measures and obligations of employees to achieve set goals. The Agency Council approved the DSO Compliance Programme by its decision from June 2016, the Council of the Agency approved the Compliance Programme of the Distribution System Operator by their decision of June 2016. Following the transfer of shares to the Republic of Serbia and the establishment of "*Elektrodistribucija* Srbije" LLC, this company submitted a new Compliance Programme to the Agency at the end of 2021 which was approved by the Agency in February 2022 in line with the Law.

Having in mind that the Distribution System Operator is obliged to appoint a Compliance Programme Officer, The Agency Council approved conditions for the appointment and duration of term of a compliance monitoring officer, as well as the approval of the appointment decision which was adopted previously in June 2016. At the end of 2021, "*Elektrodistribucija* Srbije" LLC submitted a request for approval of decision on appointment of compliance officer in "*Elektrodistribucija* Srbije" LLC to the Agency which was approved by the Agency in June 2022 in line with the Law.

At the beginning of 2023, "Elektrodistibucija Srbije" LLC submitted a new request to the Agency for approval of the conditions for appointing and the duration of the mandate of the Compliance Officer, as well as for prior approval of the appointment decision, since the person appointed in 2022 had ceased their employment with the distribution system operator. The Agency Council granted the requested approvals in February 2023, in accordance with the law.

According to the Energy Law, the Compliance Officer is responsible for monitoring the implementation of the Compliance Program and ensuring that the distribution system operator's operations comply with the regulations governing transparency and confidentiality. The officer must notify the Agency if the vertically integrated company's decision-making processes obstruct or delay projects from the Investment Plan, as well as report any other significant violations related to the implementation of the Compliance Program. The officer is also responsible for preparing an annual report on the implementation of the Compliance Program and submitting it to the Agency for review and opinion. In September 2023, the Agency Council issued a Reasoned Opinion on the Annual Report on the Implementation of the Compliance Program for 2021, which the Compliance Officer had submitted to the Agency in June 2023.

3.4.2 Price regulation

3.4.2.1 System connection costs

The DSO establishes distribution system connection costs on the basis of connection application and the Methodology for setting costs of connection to electricity transmission and distribution system which is adopted by the Agency ("Official Gazette of RS", No. 109/15; valid as of 01/03/2016). The Methodology sets the types of costs: provision of documentation, procurement and instalment of equipment and material, works as well as the method of calculation of all costs. In addition, the operator is obliged to adopt adequate standards and to use market prices, i.e. prices of work and services when setting connection costs in the connection decision. The DSO is obliged to comply with the principles of transparency and non-discrimination and, upon an applicant's request, to give the applicant an insight into acts which serve as the basis for the establishment of connection costs and the manner of setting these costs. In the Methodology, connections are grouped into kinds and types and therefore, depending on the distance between a facility and the system, on technical conditions and methods of connection, we recognize standard and individual connections.

With standard connections, depending on the number of metering devices, we recognize individual and group standard connections. A DSO's legal act on the level of connection costs for standard connections also includes the level of:

- cost of construction of standard connection for each subkind and subtype of standard connections depending on the location where metering switchboards are installed;
- unit variable cost and
- cost of a part of the system which is set by the operator in line with the Methodology.

If, based on submitted data as well as on the data which may be demanded in line with the Law, the Agency concludes that the DSO has not adopted legal acts on the level of connection costs in line with the Methodology, the Agency will ask the DSO to submit a new legal act, fully harmonised with the Methodology within 30 days since the day the Agency's written request is submitted.

The act on prices of costs of connection to the electricity distribution system which was adopted by the DSO in June 2016 was in effect until the end of August 2023. At that point, the acting director of "Elektrodistibucija Srbije" d.o.o. issued a new decision on connection costs, which came into effect and has been applied since September 1, 2023. In accordance with the Law and the Methodology, the Agency requested from the ODS the documentation on which the connection costs were determined.

The DSO is obliged to provide the data on the number of new metering points connected to the distribution system, collected revenue and money flow based on issued decisions on connection to the distribution system for each connection type as

well as on the connection costs which arose. The DSO provides these data regularly to the Agency in line with the info-tables established by the Agency.

In 2023, the DSO submitted data on the number of newly connected metering points within the distribution system, collected revenues and money flow arising from the issued decisions on the approval of connection to the distribution system for each connection type as well as on arising connection costs.

3.4.2.2 Use-of-system charges

Distribution companies started applying regulated distribution use-of-system charges on March 1, 2010 for the first time following a favourable opinion of the Agency on price proposals given by 5 distribution companies and following the approval of the Government of the Republic of Serbia. Afterwards, distribution use-of-system charges were changed on April 1, 2011, August 1, 2013 and these were valid for customers entitled to guaranteed supply until February 2016. In the meantime, the Government of the Republic of Serbia adopted a Decree on Method and Conditions of Setting Balanced Distribution Use-of-System Charges. This Decree entered into force on January 1, 2014 and it was applicable for customers who were not entitled to regulated supply. Balancing the distribution use-of-system charges, customers belonging to the same customer category and group were allowed to purchase electricity from suppliers in the open market under the same conditions on the whole territory of the Republic of Serbia.

There was a change of status of July 1, 2015 and one DSO was established for the whole territory of the Republic of Serbia. Therefore, on March 1, 2016, with the Agency's approval, the DSO adopted a uniform distribution use-of-system charge for all customers with facilities connected to the distribution system. The charge was applied until November 8, 2016 when a new distribution use-of-system charge entered into force. During the whole 2020, the price established on November 8, 2019 was applicable. During 2022, distribution use-of-system charges of November 8, 2019, February 1, 2021 and October 1, 2021 were valid. The distribution use-of-system charge which was valid as of October 1, 2021 was valid during 2023.

Table 3-22: Trend of annual level of average approved distribution use-of-system charges – total Serbia (without APKM)

RSD/kWh

Consumption category	Annual level of approved charge				
	As of 01/08/2013	As of 01/03/2016	As of 08/11/2019	As of 01/02/2021	As of 01/10/2021
Medium voltage - total	1.56	1.32	1.26	1.33	1.47
Low voltage (0.4 kV I grade)	3.53	3.58	3.40	3.64	4.05
Mass consumption - total	3.27	3.46	3.61	3.86	4.28
- 0.4 kV II grade	3.75	3.87	3.93	4.20	4.68
- households	3.20	3.40	3.56	3.80	4.22
Public lighting	3.06	2.82	2.81	3.22	3.61
AVERAGE	2.93	2.93	2.92	3.11	3.43

The average distribution use-of-system charge (VAT and duties free) in 2023 for all customers amounted to 3.50 RSD/kWh (Table 3-23).

Table 3-23: Applied average distribution use-of-system charges

RSD/kWh

Consumption category	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
35 kV	1.32	1.28	1.25	1.24	1.25	1.24	1.20	1.27	1.39	1.38
10 kV	1.59	1.50	1.46	1.38	1.39	1.40	1.41	1.45	1.57	1.59
Low voltage (0.4 kV I grade)	4.22	4.12	3.95	3.86	3.81	3.79	3.84	3.90	4.20	4.27
- 0.4 kV II grade	3.75	3.71	3.81	3.82	3.82	3.84	4.02	4.28	4.66	4.69
- households	3.29	3.27	3.38	3.42	3.45	3.48	3.55	3.86	4.23	4.28
Public lighting	3.10	3.08	2.86	2.82	2.82	2.81	2.81	3.29	3.61	3.61
AVERAGE	3.01	2.96	2.98	2.96	2.95	2.95	3.00	3.20	3.48	3.50

Figure 3-6 indicates realized average electricity distribution use-of-system charges (VAT and duties free) for Serbia (without APKM) per customer category in 2023.

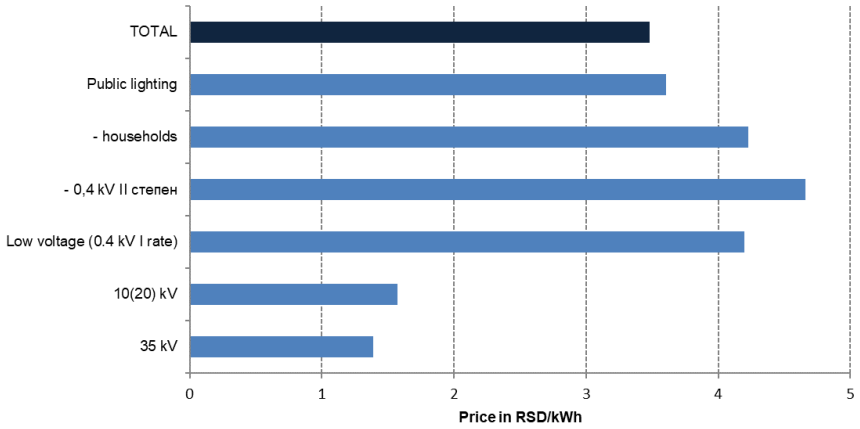

Figure 3-6: Average applied annual distribution use-of-system charge in 2023

The distribution system use-of-system charge (excluding VAT and taxes), according to EUROSTAT data for European countries in 2023, are presented in Figure 3-7.

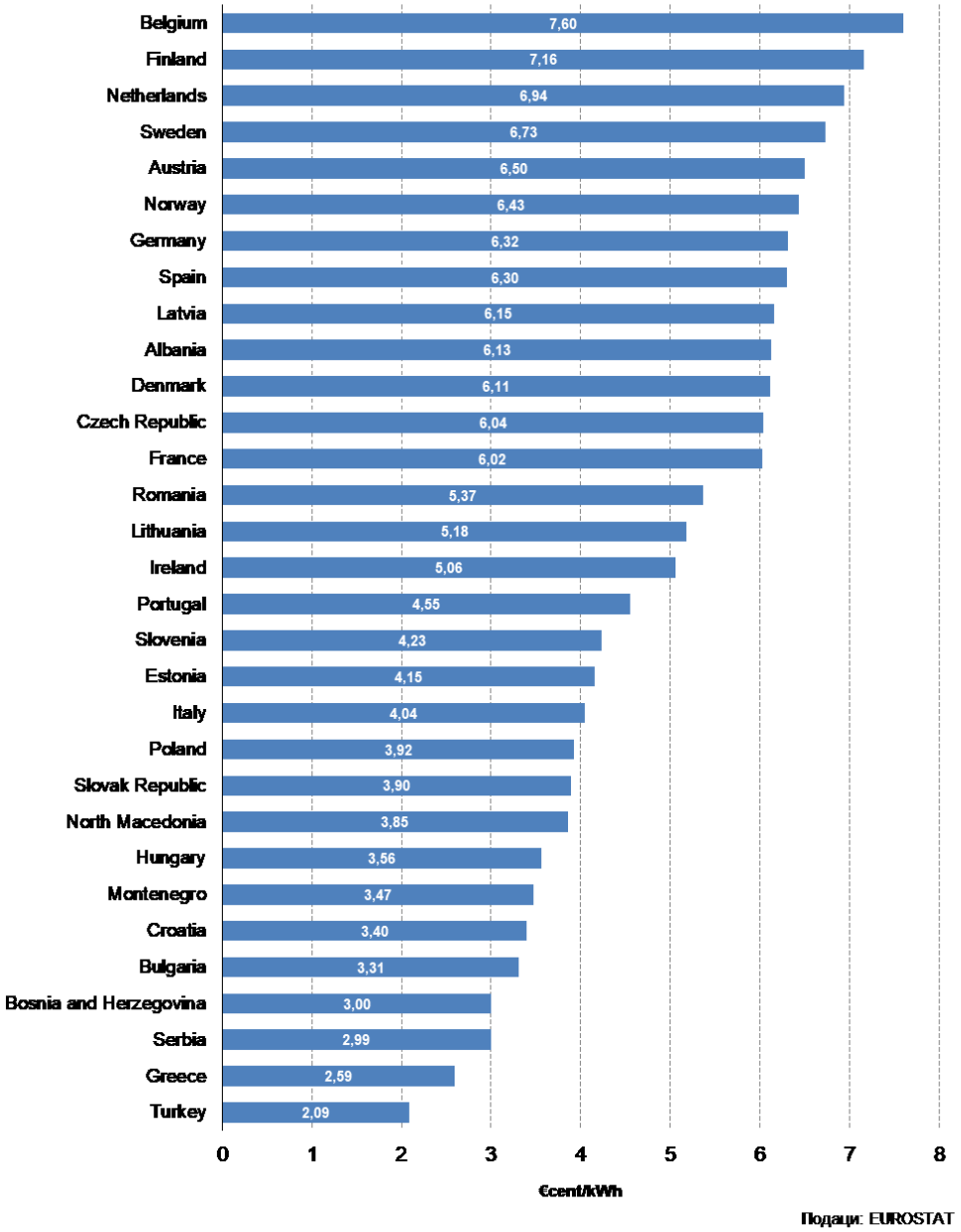

Figure 3-7: Electricity distribution use-of-system charge in European countries in 2023

Valid distribution use-of-system charge is available on the Agency website (www.aers.rs).

3.4.2.3 Price of Non-Standard Services

The Law prescribes that in addition to providing services to customers and system users which are charged via use-of-system charge or via connection costs, upon a customer's, i.e. system user's request, the distribution system operator also provides services which are not included in the above stated prices. In addition, the operator provides services when necessary in order to remove the consequences arising from a customer's or system user's acts which are contrary to regulations. Since these services are individual and occurring from occasionally upon a customer's or system user's request, they are called non-standard services. In order to compensate the costs arising from the provision of these services, DSO established a price list for non-standard services which was approved by the Agency Council in January 2019. The list includes three segments: 1) technical services to DSO system users, 2) services related to setting design and connection conditions and 3) services related to issuance of an opinion on conditions for power plants connection. The prices from

January 2019 were in effect until October 2023, when the Agency Council approved a new tariff for non-standard services, which was valid until the end of 2023.

3.4.3 Distributed electricity quantities

The electricity delivered to customers through the distribution system was mainly withdrawn from the electricity transmission system. A smaller portion of energy is provided from the power plants connected to the distribution system and this portion is increasing year by year. The energy withdrawn from the power plants connected to the distribution system in 2023 amounted to by 22.8% more than in 2022. Because of production in power plants connected to the distribution system in areas with low electricity consumption, around 44 GWh of electricity were delivered from the distribution system into the transmission system which is by even 23 GWh more than in 2022. In 2023, the connection of prosumers to the distribution system continued, a process that began in 2021. Consequently, a smaller amount of electricity was also taken from these connections, totaling approximately 13 GWh in 2023.

Table 3-24: Electricity quantities distributed in 2014 – 2023

GWh, %

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023.
Distributed - Total electricity withdrawn by the distribution system	**29,351**	**30,131**	**30,162**	**30,503**	**30,040**	**30,002**	**30,027**	**31,004**	**30,133**	**29,507**
Withdrawn from the transmission network (without customers connected to 110 kV)	29,078	29,778	29,712	29,964	29,397	29,389	29,333	30,105	28.422	**29,259**
Withdrawn from neighbouring distribution systems	6.4	32.2	2.0	1.0	1.0	1.0	1.0	1.0	1	**1.0**
Production within power plants connected to DS	267	321	448	538	642	612	693	898	1.071	**872**
Production of prosumers connected to the DS									13	**1.0**
Total delivered electricity quantities from the distribution system	**25,136**	**25,894**	**26,246**	**26,549**	**26,376**	**26,476**	**26,440**	**27,368**	**26,750**	**26,305**
Delivered to final customers (without customers connected to 110 kV)	25,130	25,863	26,147	26,425	26,240	26,358	26,374	27,298	26.206	**26,670**
Delivered to neighbouring distribution systems	27.4	32.3	98.6	121	128	113	54	60	50	**53**
Delivered to the transmission system				3	8	5	12	10	44	**21**
Delivered into closed distribution systems									5	**6**
Losses in the distribution system	**4,215**	**4,236**	**3,917**	**3,953**	**3,664**	**3,527**	**3,587**	**3,636**	**3,383**	**3,202**
Losses in the distribution system (as % of total withdrawn energy)	**14.36**	**14.06**	**12.98**	**12.96**	**12.20**	**11.75**	**11.95**	**11.73**	**11.23**	**10.85**

Electricity losses within the distribution system were lower in 2023 in percentages in comparison to 2022 but they still exceed technically justified ones. A higher level of losses in comparison to the EU countries can only partially be justified by inevitable technical losses due to a high share of low voltage consumption in comparison to most EU countries. However, high losses were also due to a great number of unauthorised connections to the distribution network and unauthorised withdrawal (theft) of electricity. In addition, losses are increased due to long-term low investments into the distribution network. Another problem includes a big delay in terms of replacement of meters and transfer of metering points and connection lines. This is proved by the data on minimum activities on control and transfer of the metering devices, connection lines and equipment which is a prerequisite of bringing these into technically valid state and of elimination of electricity theft. These activities are expected to be more intensive in the future. When giving approval of distribution use-of-system charges and when assessing justified level of losses within the network, all relevant data from previous years will be taken into account as well as the level of losses and planned activities for loss reduction.

3.5 Closed distribution systems

At the end of 2023, there were six energy entities holding a licence for electricity distribution and closed distribution system operation – the closed distribution system operator:

1. closed distribution system operator “BELGRADE AIRPORT” d.o.o. Beograd (BELGRADE AIRPORT),
2. closed distribution system operator – Company for Exploration, Production, Processing and Trade in Oil and Oil Derivatives and Exploration and Production of Natural Gas *Naftna Industrija Srbije* (Petroleum Industry of Serbia), JSC, Novi Sad (NIS),

3. closed distribution system operator “Limited Liability Company for Energy and Fluids Production and Distribution and Service Provision “ENERGETIKA”, Kragujevac, (ENERGETIKA),
4. closed distribution system operator "ELIXIR PRAHOVO" INDUSTRIJA HEMIJSKIH PROIZVODA LLC PRAHOVO (ELIXIR PRAHOVO),
5. closed distribution system operator Društvo sa ograničenom odgovornošću za građevinarstvo, održavanje i usluge "MIND REAL ESTATE" Lužnice - Kragujevac (MIND REAL ESTATE) and
6. оператор затвореног дистрибутивног система "ЕИ - предузеће за производњу и дистрибуцију енергетике и пружање услуга ЕЛМАГ д.о.о, Ниш (ЕЛМАГ).

In 2023, out of six licensed entities, four operators were responsible for the distribution of electricity and the management of closed distribution systems.

1. Closed distribution system which is operated by the closed distribution system operator “BELGRADE AIRPORT” Beograd is connected to the distribution system of ODS Elektrodistribucija Srbije to 35kV voltage level. It includes:

- 1 transformer station of 35/10 kV/kV with two transformers with total installed capacity of 16 MVA,
- 6 transformer stations of 10/0.4 kV/kV with 10 transformers with total installed capacity of 852 MVA and
- 11 km of cables of 10 kV voltage level.

In 2023, in total, the closed distribution system “BELGRADE AIRPORT” did not start operating.

2. Closed distribution system which is operated by the closed distribution system operator NIS is connected to the transmission system to 220 kV voltage level. This closed distribution system includes:

- 1 transformer station of 220/6 kV/kV with two transformers with total installed capacity of 63 MVA,
- 1 transformer station 35/6 kV/kV without a transformer since it keeps only 6 kV voltage level,
- 0.15 km of overhead lines of 220 kV voltage level and
- 8.4 km of cables of 6 kV voltage level.

Closed distribution system NIS started operating on August 1, 2021.

In 2023, 259.2 GWh of electricity were withdrawn from the transmission system into the closed distribution system NIS out of which 0.2 GWh were delivered to customers connected to closed distribution system while 258.9 GWh were consumed to cover the demand of the system. Losses within the closed distribution system amounted to 0.1 GWh of electricity.

3. Closed distribution system which is operated by the closed distribution system operator “ENERGETIKA” is connected to the transmission system to 110 kV voltage level. It includes:

- 1 transformer station of 110/35 kV/kV with two transformers with total installed capacity of 126 MVA,
- 1 transformer station 35/6 kV/kV with installed capacity of 36 MVA,
- 18 transformer stations of 6/0.4 kV/kV with total installed capacity of 55.7 MVA,
- 2.4 km of overhead lines of 35 kV voltage level,
- 19 km of cables of 35 kV of voltage level,
- 42 km of overhead lines of 6 kV voltage level and
- 30 km of power cables of 6 kV voltage level.

“ENERGETIKA” closed distribution system started operating on March 1, 2021.

In 2023, 33.1 GWh of electricity were withdrawn from the transmission system into the distribution system ENERGETIKA out of which 30.4 GWh were delivered to customers connected to the closed distribution system and 0.3 GWh were delivered into the distribution system. Losses within the closed distribution system amounted to 2.4 GWh of electricity.

4. Closed distribution system operated by the closed distribution system operator ELIXIR PRAHOVO is connected to the transmission system of Serbia on the 110 kV voltage level and it includes:

- 1 transformer station 110/10 kV/kV with two transformers with total installed capacity of 63 MVA,
- 1 transformer station 35/10 kV/kV without a transformer since only 10 kV voltage level remained there,
- 2 transformer stations 10/0,4 kV/kV with 5 transformers in total with total installed capacity of 8.3 MVA and
- 2,995 km of cables with voltage level of 10 kV.

The closed distribution system ELIXIR PRAHOVO started operating on January 1, 2023.

In 2023, a total of 60.8 GWh of electricity was received from the transmission system into the closed distribution system ELIXIR PRAHOVO. Of this, 4.5 GWh was delivered to customers connected to the closed distribution system, while 54.8 GWh was used for internal needs. Losses in the closed distribution system amounted to 1.5 GWh of electricity.

5. Closed distribution system operated by the closed distribution system operator MIND REAL ESTATE is connected to the distribution system of DSO *Elektrodistribucija Srbije* to the voltage level of 10 kV. This closed distribution system includes:

- 5 transformer stations 10/0.4 kV/kV with 10 transformers in total with total installed capacity of 10.07 MVA,
- 7.8 km of cables of 10 kV voltage level and

- 10 km of cables of 0.4 kV voltage level.

  The closed distribution system MIND REAL ESTATE started operating on April 1, 2022.

  In 2023, 5.4 GWh of electricity was withdrawn from the distribution system into the closed distribution system MIND REAL ESTATE out of which 4.1 GWh were delivered to customers connected to the closed distribution system while 1.3 GWh were consumed for self-consumption. Losses within the closed distribution system amounted to 0.1 GWh of electricity.

6. The closed distribution system operated by the distribution system operator ELMAG is connected to the distribution system DSO *Elektrodistribucija Srbije* to the 10 kV voltage level. This closed distribution system includes:

- 6 transformer stations of 10/0.4 kV/kV with total installed capacity of 8.29 MVA,
- 1 switchgear of 10 kV voltage level,
- switchgears of 0.4 kV voltage level,
- 9 km of cables of 10 kV voltage level and
- 15 km of cables of 0.4 kV voltage level.

  The closed distribution system ELMAG started operating on September 1, 2022.

  In 2022, 2.2 GWh of electricity was withdrawn from the distribution system into the closed distribution system ELMAG.

  In 2023, the closed distribution system ELMAG did not perform the distribution of electricity or manage the closed distribution system.

In line with Chapter XII of the Methodology for Setting Electricity Distribution Use-of-System Charge, closed distribution use-of-system charge is set as medium value between established and applied tariffs for tariff elements “active power”, “active energy” and tariff element “reactive energy” of all energy entities performing electricity distribution and distribution system operation for the relevant category, i.e. system user group.

The closed electricity distribution use-of-system charge is set in a manner referred to in paragraph 1 of the chapter XII of the Methodology regardless of the fact whether that system is connected to the electricity transmission system or to the electricity distribution system.

The average achieved closed distribution use-of-system charge in 2023 for all customers (excluding VAT and fees) was 1.40 RSD/kWh. This is 60% lower than the average achieved distribution use-of-system charge, as over 90% of the electricity was delivered at medium voltage.

Closed distribution system operator indicates closed distribution use-of-system charges per each tariff for tariff elements and according to categories and system users groups and charges the closed distribution use-of-system charges by applying provisions of the chapters V, VI, IX and X of the given methodology.

3.6 Electricity market

Electricity market in Serbia includes:

- bilateral electricity market;
- balanced electricity market and
- organised electricity market.

The scheme of electricity market at the end of 2023 is given in figure 3-8.

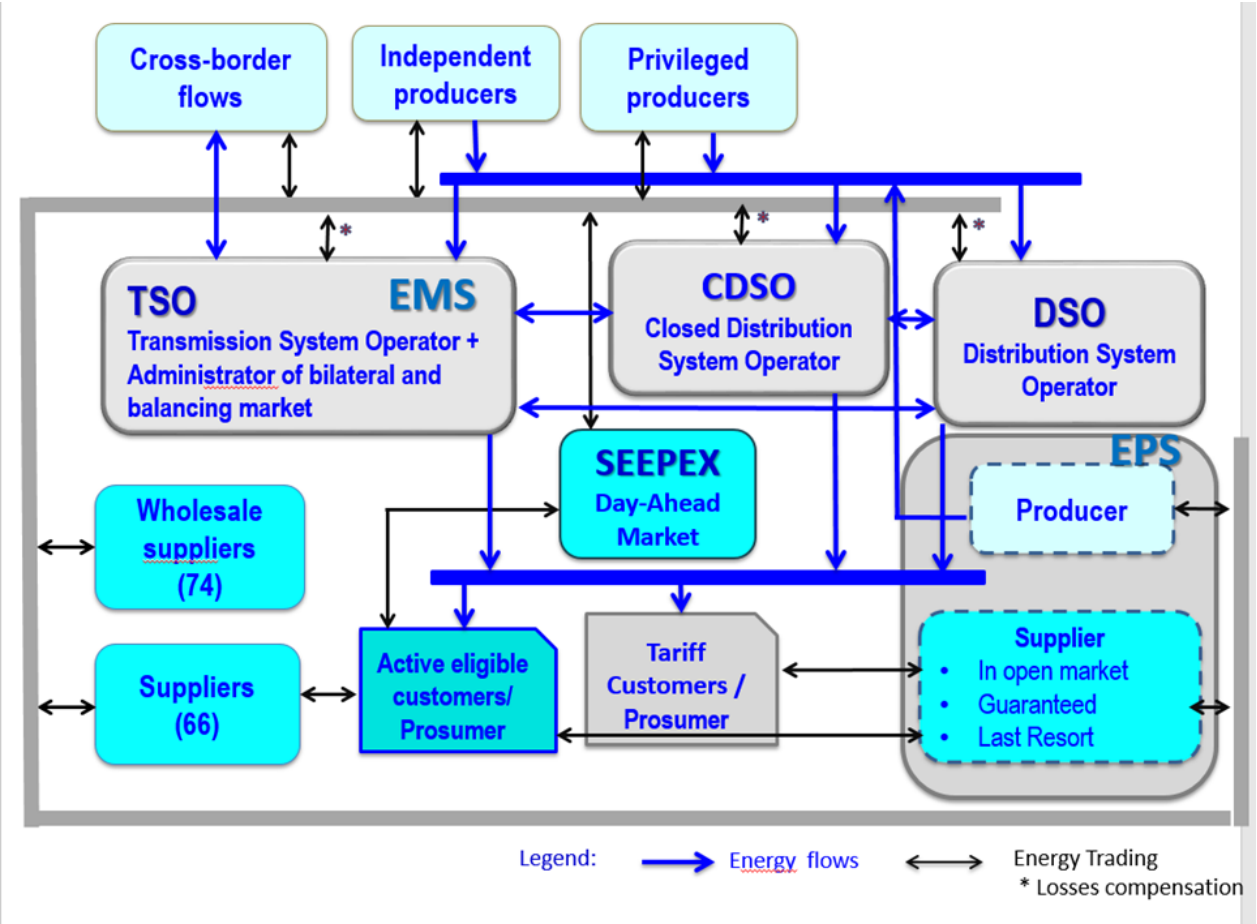

Figure 3-8: Electricity market scheme in 2023

Electricity market players are the following:

- electricity producer;
- electricity supplier;
- wholesale electricity supplier;
- final customer;
- aggregator[4];
- prosumer;
- transmission system operator in case of provision of system services, system balancing, provision of the safe system operations and electricity purchase for loss recovery within the transmission system;
- distribution system operator in case of electricity purchase for loss recovery within the distribution system;
- electricity closed distribution system operator;
- market operator;
- nominated market operator and
- electricity storage.

In addition to the aforementioned participants, other legal entities may also be participants in the organized electricity market in accordance with the rules governing the operation of the organized market.

3.6.1 Bilateral electricity market

Both electricity purchase and sales are organised on the bilateral market directly between market players, while on the wholesale bilateral market, the players traded in electricity at open market prices, while on the retail bilateral market, supply was organised at open market prices and regulated prices due to the fact that since 2014, all customers except for households and small customers have been obliged to purchase electricity in the open market. Since 2015, households and small customers have an option to select a supplier in the open market and they could always switch back to the guaranteed supplier.

[4] Aggregator was recognised in the Energy Law as a market player but their role should be defined in bylaws. In 2022, there were no aggregators in the Republic of Serbia.

3.6.1.1 Wholesale market

In 2023, wholesale electricity market was based on trade between suppliers since, except for CHP Pančevo and electricity producers from renewable energy sources, there are almost no big independent electricity producers at all. The activities of the suppliers in the open market are mostly concerned with the field of cross-border exchange, mostly for transit through Serbia which is dominant due to the central geographic position of the power system of Serbia in the region with 8 existing borders, as well as for the purpose of export and import. Compared to 2022, bilateral trade between suppliers increased by approximately 10% in 2023. During 2023, electricity exports were about 30% higher than imports, in contrast to the previous year when imports were 80% higher than exports.

The quantities of electricity sold and purchased on the organized market were nearly 50% higher compared to the previous year. The total amount of energy traded on the organized market, including day-ahead and intraday markets, in both buying and selling directions, amounted to 4,682 GWh. The total trading volume on the organized intraday market was 3,960 MWh.

There were 54 active market participants which was 10 more than in 2022. Out of the number, there were 3 suppliers operating in the field of final customers' supply which is one less than last year.

In accordance with the law, foreign legal entities can also obtain a license for the wholesale supply of electricity, so in 2023, there were 35 licensed entities on the market, of which 33 were active with a trading volume of 2,638 GWh. This accounted for 63% of the total trading between suppliers in the selling direction, and 1,007 GWh, representing 26.3% of the total trading between suppliers in the buying direction.

In 2023, the following foreign legal entities held a license for the wholesale supply of electricity:

1. *"ENERGY FINANCING TEAM (SWITZERLAND) AG", Horn, Švajcarska*
2. *"MVM Partner Energiakereskedelmi Zártkörűen Müködő Részvénytársaság", Budimpešta, Mađarska*
3. *"GEN-I", trgovanje in prodaja električne energije, d.o.o., Krško, Slovenija*
4. *"AXPO SOLUTIONS AG", Baden, Švajcarska*
5. *"ENER TRADE SHPK", (Тирана) Албанија*
6. *ALPIQ ENERGY SE, Prag*
7. *"D. TRADING INTERNATIONAL", Женева, Швајцарска*
8. *"GRAND ENERGY DISTRIBUTION", Софија, Бугарска*
9. *"NOMAD ENERGY COMPANY LTD", Софија, Бугарска*
10. *ЕЛЕКТРОПРИВРЕДА ЦРНЕ ГОРЕ АД - НИКШИЋ, НИКШИЋ*
11. *"PUBLIC POWER CORPORATION S.A.", Атина, Грчка*
12. *"FREEPOINT COMMODITIES EUROPE LLP", Рединг, Велика Британија*
13. *ИНТЕРЕНЕРГО доо, Љубљана*
14. *"VITOL GAS AND POWER B.V.", Roterdam, Holandija*
15. *"ENNA OPSKRBA" доо, Вуковар, Хрватска*
16. *"DANSKE COMMODITIES A/S", Архус, Данска*
17. *"CENTRICA ENERGY TRADING A/S", Данска*
18. *ХРВАТСКА ЕЛЕКТРОПРИВРЕДА д.д., Загреб*
19. *"MET AUSTRIA ENERGY TRADE GmbH", Беч, Аустрија*
20. *"TINMAR ENERGY S.A.", Bukurešt*
21. *"ENERGI DANMARK A/S", Архус, Данска*
22. *"STRATEGIC ENERGY TRADING SOCIETE ANONYME", Атина, Грчка*
23. *Мјешовити холдинг "ЕЛЕКТРОПРИВРЕДА РЕПУБЛИКЕ СРПСКЕ", Требиње*
24. *ENERJISA EUROPE KORLATOLT FELELOSSEGU TARSASAG, Mađarska*
25. *"STATKRAFT MARKETS Gmbh", Дизелдорф*
26. *Привредно друштво "ENERGOVIA EOOD", Софија, Бугарска*
27. *"KER TOKI POWER AD", Софија, Бугарска*
28. *"MFT Energy" A/S, Aarhus C., Kraljevina Danska*
29. *"RESPECT ENERGY" S.A., Варшава, Пољска*
30. *"AXPO BULGARIA EAD", Софија, Бугарска*
31. *ČEZ A.S", Праг, Чешка Република*
32. *Привредно друштво "EDF TRADING LIMITED", Лондон, Велика Британија*
33. *"HOLDING SLOVENSKE ELEKTRARNE" доо, Љубљана*
34. *ДРУШТВО ЗА ТРГОВИНУ "НЕР-ENERGIJA" ДОО БЕОГРАД*
35. *ПЕТРОЛ, Словенска енергетска дружба, д.д., Љубљана.*

Figure 3-9 indicates electricity quantities for each of suppliers' activities in 2022 and 2023[5] but the data on the sale in the open market do not include electricity sold to cover one's own demand in the vertically-integrated supplier company.

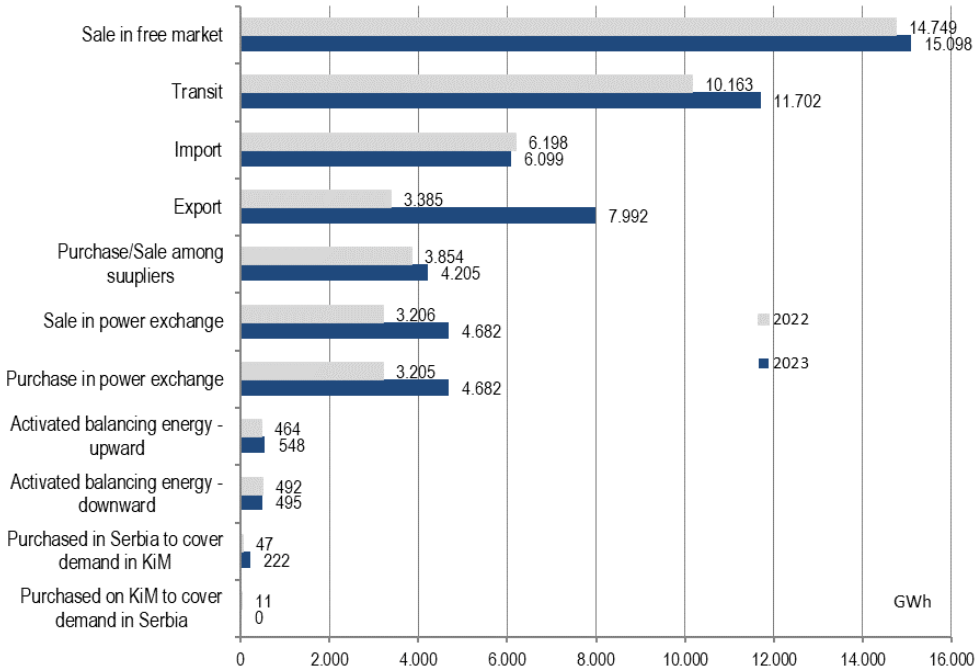

Figure 3-9: Electricity quantities for each supplier activity in 2022 and 2023

3.6.1.1.1 Suppliers' activities

Suppliers who sold energy to other suppliers in the bilateral electricity market: (some of the names of companies are given in Cyrillic letter since this is their official name in the licence):

1. *"ENERGY FINANCING TEAM (SWITZERLAND) AG", Horn, Švajcarska*
2. *Друштво за истраживање, производњу, прераду, дистрибуцију и промет нафте и нафтних деривата и истраживање и производњу природног гаса "Нафтна индустрија Србије"а.д. Нови Сад*
3. *"MVM Partner Energiakereskedelmi Zártkörűen Működő Részvénytársaság", Budimpešta, Mađarska*
4. *"GEN-I", trgovanje in prodaja električne energije, d.o.o., Krško, Slovenija*
5. *"AXPO SOLUTIONS AG", Baden, Švajcarska*
6. *"EFT TRADE" д.о.о., Београд*
7. *"ENER TRADE SHPK", (Тирана) Албанија*
8. *ALPIQ ENERGY SE, Prag*
9. *"D. TRADING INTERNATIONAL", Женева, Швајцарска*
10. *"GRAND ENERGY DISTRIBUTION", Софија, Бугарска*
11. *GEN-I друштво са ограниченом одговорношћу Београд*
12. *AXPO друштво са ограниченом одговорношћу,Београд*
13. *"MET SRB" д.о.о. Београд*
14. *Привредно друштво "SCM POWER" д.о.о. Београд*
15. *Акционарско друштво "ЕЛЕКТРОПРИВРЕДА СРБИЈЕ" Београд*
16. *"HSE BALKAN ENERGY" д.о.о. Друштво за инжењеринг и трговину*
17. *Привредно друштво „ЕПЦГ“ д.о.о. Београд*
18. *“NOVA COMMODITIES“ друштво са ограниченом одговорношћу, Београд*
19. *"NOMAD ENERGY COMPANY LTD", Софија, Бугарска*
20. *Привредно друштво "TERNA ENERGY TRADING" доо, Нови Београд*
21. *"RESTART ENERGY" доо Београд-Нови Београд*
22. *"AYEN ENERGY TRADING" доо Београд-Стари град*

[5] All the data given in tables were submitted until February 15, 2022 and are entitled to modification in line with the Electricity Market Rules.

23. *"EETS" TRGOVINA ELEKTRIČNOM ENERGIJOM DOO BEOGRAD*
24. *ЕЛЕКТРОПРИВРЕДА ЦРНЕ ГОРЕ АД - НИКШИЋ, НИКШИЋ*
25. *"PUBLIC POWER CORPORATION S.A.", Атина, Грчка*
26. *"FREEPOINT COMMODITIES EUROPE LLP", Рединг, Велика Британија*
27. *ИНТЕРЕНЕРГО доо, Љубљана*
28. *"VITOL GAS AND POWER B.V.", Roterdam, Holandija*
29. *"ENNA OPSKRBA" доо, Вуковар, Хрватска*
30. *ПЕТРОЛ, Словенска енергетска дружба, д.д., Љубљана*
31. *Привредно друштво "GREEN BALANCING GROUP" доо, Београд*
32. *"DANSKE COMMODITIES A/S", Архус, Данска*
33. *Привредно друштво "ELMAKO-ENERGY" доо, Београд*
34. *МХЕ ПАВЛИЦА ДОО, Београд (Врачар)*
35. *"TWINFIN TESLA" доо, Београд*
36. *ХРВАТСКА ЕЛЕКТРОПРИВРЕДА д.д., Загреб*

Suppliers which purchased energy from other suppliers in the bilateral electricity market:

1. *Привредно друштво "SCM POWER" д.о.о. Београд*
2. *"HSE BALKAN ENERGY" д.о.о. Друштво за инжењеринг и трговину*
3. *Акционарско друштво "ЕЛЕКТРОПРИВРЕДА СРБИЈЕ" Београд*
4. *"MVM Partner Energiakereskedelmi Zártkörűen Működő Részvénytársaság", Budimpešta, Mađarska*
5. *GEN-I друштво са ограниченом одговорношћу Београд*
6. *"ENERGY FINANCING TEAM (SWITZERLAND) AG", Horn, Švajcarska*
7. *Друштво са ограниченом одговорношћу за трговину и услуге MVM PARTNER SERBIA д.о.о., Београд*
8. *"EFT TRADE" д.о.о., Београд*
9. *"ENER TRADE SHPK", (Тирана) Албанија*
10. *АХРО друштво са ограниченом одговорношћу,Београд*
11. *"GEN-I", trgovanje in prodaja električne energije, d.o.o., Krško, Slovenija*
12. *"MET SRB" д.о.о. Београд*
13. *"MET AUSTRIA ENERGY TRADE GmbH", Беч, Аустрија*
14. *Привредно друштво „ЕПЦГ“ д.о.о. Београд*
15. *"AXPO SOLUTIONS AG", Baden, Švajcarska*
16. *"TINMAR ENERGY S.A.", Bukurešt*
17. *"D. TRADING INTERNATIONAL", Женева, Швајцарска*
18. *"RESTART ENERGY" доо Београд-Нови Београд*
19. *"VITOL GAS AND POWER B.V.", Roterdam, Holandija*
20. *Привредно друштво "TERNA ENERGY TRADING" доо, Нови Београд*
21. *"FREEPOINT COMMODITIES EUROPE LLP", Рединг, Велика Британија*
22. *"EETS" TRGOVINA ELEKTRIČNOM ENERGIJOM DOO BEOGRAD*
23. *ALPIQ ENERGY SE, Prag*
24. *Друштво за истраживање, производњу, прераду, дистрибуцију и промет нафте и нафтних деривата и истраживање и производњу природног гаса "Нафтна индустрија Србије"а.д. Нови Сад*
25. *ЕЛЕКТРОПРИВРЕДА ЦРНЕ ГОРЕ АД - НИКШИЋ, НИКШИЋ*
26. *“NOVA COMMODITIES“ друштво са ограниченом одговорношћу, Београд*
27. *ИНТЕРЕНЕРГО доо, Љубљана*
28. *Предузеће "ENERGY DELIVERY SOLUTIONS" д.о.о., Београд*
29. *"PUBLIC POWER CORPORATION S.A.", Атина, Грчка*
30. *ПЕТРОЛ, Словенска енергетска дружба, д.д., Љубљана*
31. *ХРВАТСКА ЕЛЕКТРОПРИВРЕДА д.д., Загреб*
32. *МХЕ ПАВЛИЦА ДОО, Београд (Врачар)*
33. *Nomad energy company Ltd. Sofija, Bugarska*

Suppliers which imported electricity:

1. *"ENERGY FINANCING TEAM (SWITZERLAND) AG", Horn, Švajcarska*
2. *Мјешовити холдинг "ЕЛЕКТРОПРИВРЕДА РЕПУБЛИКЕ СРПСКЕ", Требиње*
3. *Привредно друштво "TERNA ENERGY TRADING" доо, Нови Београд*
4. *"AXPO SOLUTIONS AG", Baden, Švajcarska*
5. *ХРВАТСКА ЕЛЕКТРОПРИВРЕДА д.д., Загреб*
6. *Акционарско друштво "ЕЛЕКТРОПРИВРЕДА СРБИЈЕ" Београд*

7. *"MFT Energy" A/S, Aarhus C., Kraljevina Danska*
8. *Привредно друштво „ЕПЦГ“ д.о.о. Београд*
9. *"ENERGI DANMARK A/S", Архус, Данска*
10. *"D. TRADING INTERNATIONAL", Женева, Швајцарска*
11. *"HSE BALKAN ENERGY" д.о.о. Друштво за инжењеринг и трговину*
12. *"DANSKE COMMODITIES A/S", Архус, Данска*
13. *"NOMAD ENERGY COMPANY LTD", Софија, Бугарска*
14. *"GRAND ENERGY DISTRIBUTION", Софија, Бугарска*
15. *"ENER TRADE SHPK", (Тирана) Албанија*
16. *GEN-I друштво са ограниченом одговорношћу Београд*
17. *"CENTRICA ENERGY TRADING A/S", Данска*
18. *"TINMAR ENERGY S.A.", Bukurešt*
19. *"AXPO BULGARIA EAD", Софија, Бугарска*
20. *Привредно друштво "ENERGOVIA EOOD", Софија, Бугарска*
21. *“NOVA COMMODITIES“ друштво са ограниченом одговорношћу, Београд*
22. *"EETS" TRGOVINA ELEKTRIČNOM ENERGIJOM DOO BEOGRAD*
23. *ИНТЕРЕНЕРГО доо, Љубљана*
24. *AXPO друштво са ограниченом одговорношћу,Београд*
25. *Привредно друштво "SCM POWER" д.о.о. Београд*
26. *"STATKRAFT MARKETS Gmbh", Дизелдорф*
27. *"AYEN ENERGY TRADING" доо Београд-Стари град*
28. *Друштво са ограниченом одговорношћу за трговину и услуге MVM PARTNER SERBIA д.о.о., Београд*
29. *"KER TOKI POWER AD", Софија, Бугарска*
30. *ALPIQ ENERGY SE, Prag*
31. *"RESPECT ENERGY" S.A., Варшава, Пољска*
32. *ПЕТРОЛ, Словенска енергетска дружба, д.д., Љубљана*
33. *"FREEPOINT COMMODITIES EUROPE LLP", Рединг, Велика Британија*
34. *"MVM Partner Energiakereskedelmi Zártkörűen Működő Részvénytársaság", Budimpešta, Мађарска*
35. *ČEZ A.S", Праг, Чешка Република*
36. *ENERJISA EUROPE KORLATOLT FELELOSSEGU TARSASAG, Мађарска*
37. *"STRATEGIC ENERGY TRADING SOCIETE ANONYME", Атина, Грчка*
38. *"VITOL GAS AND POWER B.V.", Roterdam, Holandija*
39. *"PUBLIC POWER CORPORATION S.A.", Атина, Грчка*
40. *"MET AUSTRIA ENERGY TRADE GmbH", Беч, Аустрија*
41. *Предузеће "ENERGY DELIVERY SOLUTIONS" д.о.о., Београд*

Suppliers which exported electricity:

1. *Акционарско друштво "ЕЛЕКТРОПРИВРЕДА СРБИЈЕ" Београд*
2. *Привредно друштво "SCM POWER" д.о.о. Београд*
3. *Привредно друштво "TERNA ENERGY TRADING" доо, Нови Београд*
4. *ALPIQ ENERGY SE, Prag*
5. *"ENERGI DANMARK A/S", Архус, Данска*
6. *"HSE BALKAN ENERGY" д.о.о. Друштво за инжењеринг и трговину*
7. *"MVM Partner Energiakereskedelmi Zártkörűen Működő Részvénytársaság", Budimpešta, Мађарска*
8. *"STATKRAFT MARKETS Gmbh", Дизелдорф*
9. *"MFT Energy" A/S, Aarhus C., Kraljevina Danska*
10. *"AXPO SOLUTIONS AG", Baden, Švajcarska*
11. *"TINMAR ENERGY S.A.", Bukurešt*
12. *GEN-I друштво са ограниченом одговорношћу Београд*
13. *Друштво са ограниченом одговорношћу за трговину и услуге MVM PARTNER SERBIA д.о.о., Београд*
14. *"FREEPOINT COMMODITIES EUROPE LLP", Рединг, Велика Британија*
15. *ХРВАТСКА ЕЛЕКТРОПРИВРЕДА д.д., Загреб*
16. *Мјешовити холдинг "ЕЛЕКТРОПРИВРЕДА РЕПУБЛИКЕ СРПСКЕ", Требиње*
17. *"ENERGY FINANCING TEAM (SWITZERLAND) AG", Horn, Švajcarska*
18. *ИНТЕРЕНЕРГО доо, Љубљана*
19. *"D. TRADING INTERNATIONAL", Женева, Швајцарска*
20. *"NOMAD ENERGY COMPANY LTD", Софија, Бугарска*
21. *"RESPECT ENERGY" S.A., Варшава, Пољска*
22. *"ENER TRADE SHPK", (Тирана) Албанија*
23. *AXPO друштво са ограниченом одговорношћу,Београд*
24. *Привредно друштво "ENERGOVIA EOOD", Софија, Бугарска*

25. *Привредно друштво „ЕПЦГ“ д.о.о. Београд*
26. *"CENTRICA ENERGY TRADING A/S", Данска*
27. *ПЕТРОЛ, Словенска енергетска дружба, д.д., Љубљана*
28. *"PUBLIC POWER CORPORATION S.A.", Атина, Грчка*
29. *"AXPO BULGARIA EAD", Софија, Бугарска*
30. *"STRATEGIC ENERGY TRADING SOCIETE ANONYME", Атина, Грчка*
31. *"MET AUSTRIA ENERGY TRADE GmbH", Беч, Аустрија*
32. *"EETS" TRGOVINA ELEKTRIČNOM ENERGIJOM DOO BEOGRAD*
33. *"VITOL GAS AND POWER B.V.", Roterdam, Holandija*
34. *Предузеће "ENERGY DELIVERY SOLUTIONS" д.о.о., Београд*
35. *Привредно друштво "EDF TRADING LIMITED", Лондон, Велика Британија*
36. *ČEZ A.S", Праг, Чешка Република*
37. *ENERJISA EUROPE KORLATOLT FELELOSSEGU TARSASAG, Мађарска*
38. *"KER TOKI POWER AD", Софија, Бугарска*
39. *“NOVA COMMODITIES“ друштво са ограниченом одговорношћу, Београд*

Suppliers which operated in the field of electricity transit:

1. *GEN-I друштво са ограниченом одговорношћу Београд*
2. *"NOMAD ENERGY COMPANY LTD", Софија, Бугарска*
3. *"ENERGY FINANCING TEAM (SWITZERLAND) AG", Horn, Švajcarska*
4. *"HSE BALKAN ENERGY" д.о.о. Друштво за инжењеринг и трговину*
5. *"DANSKE COMMODITIES A/S", Архус, Данска*
6. *ИНТЕРЕНЕРГО доо, Љубљана*
7. *"ENERGI DANMARK A/S", Архус, Данска*
8. *"MVM Partner Energiakereskedelmi Zártkörűen Működő Részvénytársaság", Budimpešta, Мађарска*
9. *ХРВАТСКА ЕЛЕКТРОПРИВРЕДА д.д., Загреб*
10. *ПЕТРОЛ, Словенска енергетска дружба, д.д., Љубљана*
11. *"AXPO SOLUTIONS AG", Baden, Švajcarska*
12. *"AYEN ENERGY TRADING" доо Београд-Стари град*
13. *"MFT Energy" A/S, Aarhus C., Kraljevina Danska*
14. *ALPIQ ENERGY SE, Prag*
15. *"PUBLIC POWER CORPORATION S.A.", Атина, Грчка*
16. *Предузеће "ENERGY DELIVERY SOLUTIONS" д.о.о., Београд*
17. *"STATKRAFT MARKETS Gmbh", Дизелдорф*
18. *"AXPO BULGARIA EAD", Софија, Бугарска*
19. *"ENER TRADE SHPK", (Тирана) Албанија*
20. *Привредно друштво "SCM POWER" д.о.о. Београд*
21. *"KER TOKI POWER AD", Софија, Бугарска*
22. *AXPO друштво са ограниченом одговорношћу,Београд*
23. *Друштво са ограниченом одговорношћу за трговину и услуге MVM PARTNER SERBIA д.о.о., Београд*
24. *"FREEPOINT COMMODITIES EUROPE LLP", Рединг, Велика Британија*
25. *"EETS" TRGOVINA ELEKTRIČNOM ENERGIJOM DOO BEOGRAD*
26. *"CENTRICA ENERGY TRADING A/S", Данска*
27. *"VITOL GAS AND POWER B.V.", Roterdam, Holandija*
28. *"STRATEGIC ENERGY TRADING SOCIETE ANONYME", Атина, Грчка*
29. *“NOVA COMMODITIES“ друштво са ограниченом одговорношћу, Београд.*

In 2023, based on the data submitted by electricity suppliers (commercial data), transit increased by 15%, import decreased by 2%, while export was 2.3 times higher than the previous year. Both export and import were significant throughout the year. Favorable hydrological conditions and a mild winter allowed for substantial export quantities during the winter season.

The scale of import, export and transit realised by suppliers for each month of 2023 is indicated in Figure 3-10.

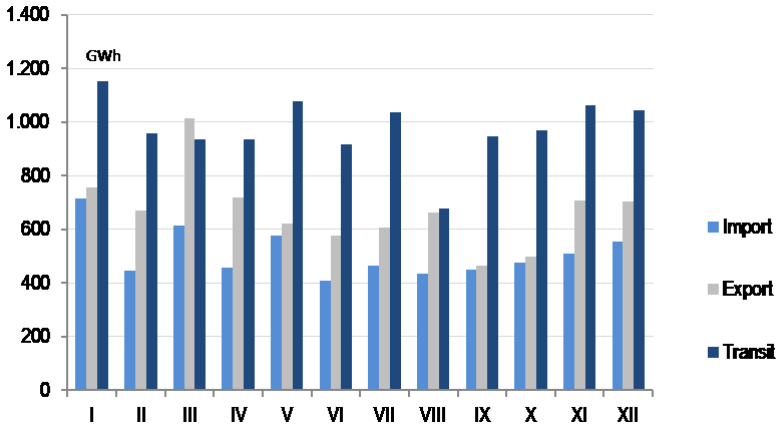

Figure 3-10: Import, export and transit of suppliers in 2023

Figure 3-11 indicates electricity purchase/sale between suppliers, purchase of *EPS* JSC from other suppliers and sales of *EPS* JSC to other suppliers. In the first quarter of 2023, *EPS* JSC purchased lower scale electricity quantities from other suppliers. During the whole year, PE *EPS*' sale of electricity to other suppliers occurred only in March.

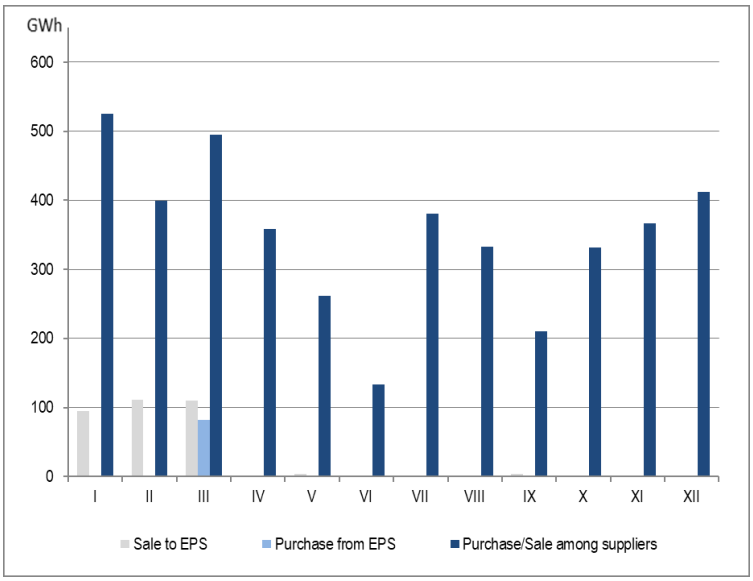

Figure 3-11: Purchase/sales between suppliers, i.e. between suppliers and *EPS* JSC in 2023

Relevant indicators of development level and electricity market concentration in Serbia (without APKM) in 2023 are given in Table 3-25. The following data are given for each of indicated supplier's activities:

- total electricity quantity;
- electricity share traded by three suppliers with the biggest scale of trade activities in total electricity quantity per each activity;
- value of Herfindahl-Hirschman Index (HHI), indicating realised level of market concentration[6] and
- evaluation of market concentration level per individual activities[7].

[6] Herfindahl-Hirschman Index is defined as the sum of squares of share of a single company in the market. The lower the value, the more developed is market competition.

[7] Market concentration limits are the following:
HHI < 1000 – not concentrated
1001 < HHI < 2000 - moderately concentrated
HHI >2001 - highly concentrated market

Table 3-25: Electricity market concentration level in Serbia in 2023

Supplier's activity in 2022	Electricity quantity (GWh)	Share of three suppliers with the greatest trading scale [%]		Herfindahl-Hirschman Index - HHI	Market concentration level
	(GWh)	(%)	(GWh)		
Trade in organised day-ahead market (exchange)					
Sale	4,682	40	1,883	829	Low
Purchase	4,682	36	1,660	712	Low
Trade between suppliers in bilateral market					
Sale	4,165	53	2,230	1,443	High
Purchase	4,205	49	2,048	1,340	High

In 2023, trade in organized market, power exchange, was by more than 40% higher than last year (when it amounted to 3,205 GWh) which indicates that the market is more stable in contrast to big changes in the scale of trade during the first years of power exchange operation. The trade in bilateral market was by 10% higher than last year (when it amounted to 3,853 GWh).

3.6.1.2 Retail market

3.6.1.2.1 Electricity quantities delivered to final customers

In 2023, 30,021 GWh were sold and delivered to final customers (without the power plants consumption meant for production), which is by around 437 GWh less than the total quantities of electricity delivered in 2021 when the greatest quantity of electricity was delivered in the past ten years. Table 3-26 indicates electricity consumption in Serbia (without APKM) in the period 2014-2023, including electricity producers withdrawn from the transmission system in order to meet their own demand.

Table 3-26: Electricity consumption structure in the period 2014-2023

GWh

Consumption category	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2023/ 2022
Households	13,802	14,062	13,931	13,815	13,415	13,340	13,718	13,877	13,379	13,008	97.2
Other customers connected to low	5,322	5,546	5,665	5,746	5,756	5,707	5,376	5,740	5,696	5,519	96.9
Customers connected to low voltage in total	**19,124**	**19,608**	**19,596**	**19,561**	**19,171**	**19,047**	**19,094**	**19,617**	**19,075**	**18,527**	**97.1**
Customers connected to medium voltage (10,	5,985	6,254	6,550	6,865	7,069	7,311	7,280	7,807	7,905	8,039	101.7
Customers connected to high voltage (110 kV)	2,555	2,669	2,673	2,695	2,798	2,649	2,665	3,034	3,262	3,455	105.9
Electricity delivered to final customers	**27,664**	**28,531**	**28,819**	**29,121**	**29,038**	**29,007**	**29,039**	**30,458**	**30,242**	**30,021**	**99.3**
TPP and HPP consumption to cover	401	416	391	394	427	467	429	404	362	392	108.3
Total consumption	**28,501**	**28,065**	**28,947**	**29,210**	**29,515**	**29,465**	**29,474**	**30,862**	**30,604**	**30,413**	**99.4**

In comparison to 2022, final customers consumption (without the consumption of power plants for production purposes) in 2023 was lower by 0.7%. The consumption of households decreased by 2.8% (371 GWh) and of other customers connected to the low voltage by 3.1% (177 GWh). On the other hand, high voltage customers consumption increased by 5.9% (193 GWh) and medium voltage customers consumption increased by 1.1% (134 GWh). Temperatures during winter months were high in comparison to multi-year average for that period and this had an impact on the reduction of consumption in the winter season in comparison to 2022 when electricity is consumed for heating purposes in households. Producers withdrew 8.3% more electricity to cover their own demand (consumption of power plants for production purposes) than last year. When analyzing the data during the surveyed ten-year period, one would take into account the fact that there was a large number of interruptions in the supply of customers in 2014 due to weather disasters – floods and icy rain which some of the regions in the Republic of Serbia faced several times during 2014.

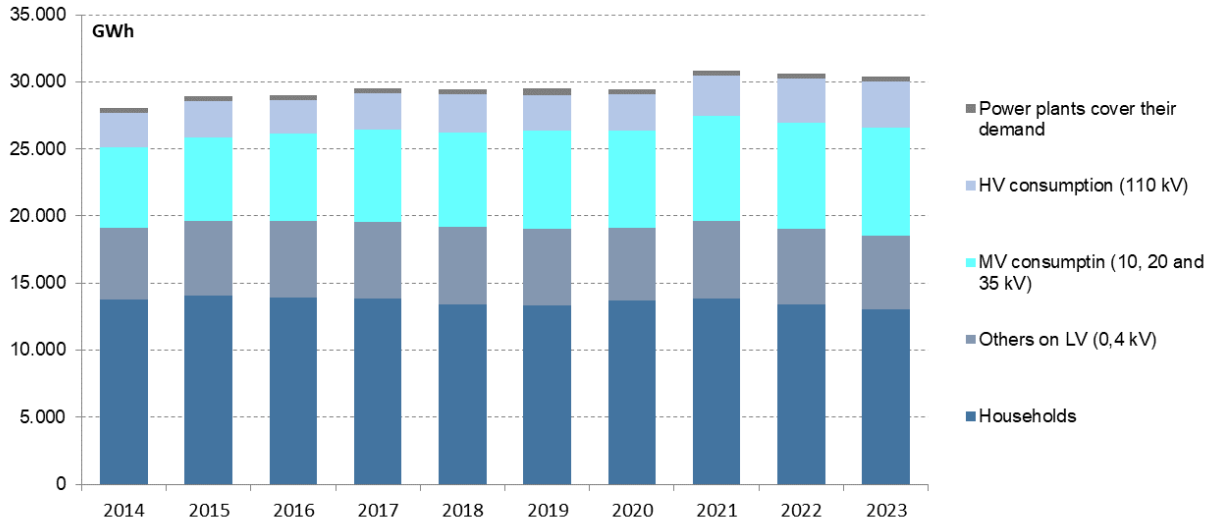

Figure 3-12: Electricity consumption structure in Serbia in the period 2014-2023 (without APKM)

The total number of delivery points for customers' delivery in the Republic of Serbia without APKM (without metering points of facilities within Železnice Srbije/Serbian Railroad – there are 42 of them on the transmission system) at the end of 2023 amounted to 3,792,741. Compared to 2022, the number was increased by 0.8%.

Table 3-27: Number of metering points in 2022 and 2023

Consumption category	2022	2023	Index 2023/2022
Households	3,333,214	3,367,109	101.0%
Other customers connected to low voltage (0.4 kV)	422,231	419,718	99.4%
Customers connected to medium voltage (10, 20 and 35 kV)	5,656	5,862	103.6%
Customers connected to high voltage (110 kV)	52	52	100.0%
Total number of metering points	**3,761,153**	3,792,741	**100.8%**

3.6.1.2.2 Sale of electricity to final customers

The total electricity sale to final customers (without consumption of power plants for production purposes) amounted to 30,021 GWh in 2023. In comparison to 2022, it decreased by 0.7% (221 GWh).

Since 2014, all customers except for households and small customers (that, in order to be awarded with a small customer status, in addition to the requirement related to the annual income and the number of employees, also have a limit of 30,000 kWh of consumption in the previous calendar year and a requirement imposing that all their facilities have to be connected to the network of less than 1 kV voltage) have been obliged to purchase electricity in the open market. The market was fully open in 2015 when households and small customers, in addition to being entitled to guaranteed supply, have an option to select a supplier in the open market and they could always switch back to the guaranteed supply at regulated electricity prices.

Table 3-28: Electricity sale in retail market in 2020-2023

GWh

	2020	2021	2022	2023	Index 2023/2022
Regulated market	14,935	15,207	14,641	14,104	96.3%
Open market	14,104	15,251	15,601	15,917	102.0%
Supply at open prices	14,032	15,041	15,487	15,873	102.5%
Supply of the last resort	72	210	114	44	38.6%
Total sale	**29,039**	**30,458**	**30,242**	**30,021**	**99.3%**

On the regulated market, 3.7% (537 GWh) less electricity was sold while 2% (316 GWh) more electricity was sold in the open market in comparison to 2022 (out of the number, 70 GWh less electricity was sold via the supply of the last resort in comparison to 2022).

3.6.1.2.3 Electricity sale in the regulated market

On the regulated market, in 2023, only households and small customers purchased electricity, so this market accounted for 47% of the total electricity consumed by end customers. The quantities of electricity delivered on the regulated market by consumption categories for the period 2019-2023 are shown in Table 3-29. At the end of 2023, electricity was delivered to final customers at regulated prices to over 3.5 million metering points.

Pursuant to the 2004 Energy Law, regulated electricity prices for final customers were applied on January 1, 2008 for the first time, upon the positive opinion of the Energy Agency on the PE *EPS* proposal and the approval given by the Government of the Republic of Serbia. In 2023, the prices for guaranteed supply of final customers which were approved January 1, May 1, November 1, 2023 were applicable.

The current regulated electricity prices for final customers are available on the Agency's website (www.aers.rs).

In 2023, reached average base price on SEEPEX power exchange which does not contain transmission and distribution costs amounted to 103.7 €/MWh on the annual level. Average weighted wholesale price for the procurement of electricity, which serves as the base for setting the price for guaranteed supply of final customers when the approval is given to the price on 01/01/2023, 01/05/2023 and 01/11/2023, amounted to 4.49 RSD/kWh, i.e. 38.27€/MWh, calculated with the average € exchange rate for 2023.

Table 3-29: Electricity quantities delivered in the regulated market

Consumption category	Electricity quantities delivered in the regulated market (GWh)				
	2019	2020	2021	2022.	2023
Low voltage (0.4 kV I grade)	247	231	261	232	181
- 0.4 kV II grade	1,048	990	1,078	1,042	960
- households	13,326	13,701	13,856	13,356	12,959
Public lighting	16	13	12	10	4
TOTAL guaranteed supply	**14,637**	**14,935**	**15,207**	**14,640**	**14,104**

Table 3-30 represents the trend of average realised annual prices for customers entitled to guaranteed (public) supply, i.e. to electricity being purchased at regulated prices. The level and trend of given average prices (VAT and duties free) for each year separately depend primarily from the dynamics and electricity quantities consumed by certain customers' categories and groups during the year and on the date of application of approved prices.

Table 3-30: Average annual regulated prices for final customers (VAT and duties free)

RSD/kWh

Consumption category	Realised average annual price				
	2019	2020	2021	2022	2023
Low voltage (0.4 kV I grade)	11.43	12.21	11.57	11.72	15.22
- 0.4 kV II grade	8.96	9.39	9.67	9.97	12.64
- households	6.88	7.14	7.37	7.60	9.91
Public lighting	6.56	6.80	7.01	7.21	8.93
Total low voltage	7.10	7.36	7.60	7.83	10.17
TOTAL AVERAGE guaranteed supply (as universal service)	**7.10**	**7.36**	**7.60**	**7.83**	**10.17**

Based on consumption of this category achieved in 2023, 65% of energy spent in the green zone, 33% in the blue zone and 2% in the red zone.

Table 3-31: Prices for mass consumption customer category for each consumption zone

Customer category		Consumed active energy	Tariffs* since 01/01/2023	since 01/05/2023	since 01/11/2023
Mass consumption		**(MWh)**	**(RSD/kWh)**	**(RSD /kWh)**	**(RSD /kWh)**
Guaranteed supplier's expenditure			145.22	146.5201	160.6695
Calculation power			54.258	54.2580	54.2580
Active energy					
HT green	up to 350 kWh	4,899,523	7.584	8.3360	9.1092
LT green	up to 350 kWh	2,461,967	1.896	2.0840	2.2773
ST green	up to 350 kWh	1,936,394	6.636	7.2940	7.9706
HT blue	351-1600 kWh	2,495,287	11.376	12.5040	13.6638
LT blue	351-1600 kWh	1,544,072	2.844	3.1260	3.4160
ST blue	351-1600 kWh	743,102	9.954	10.9410	11.9558
HT red	over 1600 kWh	175,560	22.752	25.0080	27.3276
LT red	over 1600 kWh	95,913	5.688	6.2520	6.8319
ST red	over 1600 kWh	43,989	19.908	21.8820	23.9117
Total		14,395,806			

*Prices are given without VAT (20%) and duty (7.5%)
HT (High Tariff)
LT (Low Tariff)
ST (Single Tariff)

Figures 3-13 and 3-16 indicate the comparison of electricity prices for reference customers from two categories -households and industry in Serbia, EU countries and the region. The prices were applied in the second half of 2022 and calculated in line EUROSTAT methodology and given in their reports.

One should bear in mind in Figure 3-13 that the reference average annual electricity consumption in households which is used in EUROSTAT methodologies between 2,500 and 5,000 kWh and that it is in line with the European average and standards, while the average annual consumption in households in Serbia is higher. The prices indicated in Serbia for reference customers in the household category are among the lowest when considering VAT and taxes. Lower prices were achieved in Bosnia and Herzegovina and Turkey compared to Serbia. When it comes to the prices for reference customers in the household category including VAT and taxes, in addition to the mentioned countries, lower prices were also found in Montenegro. The indicated prices for reference customers in the household category with VAT and taxes are higher in Serbia, given that the VAT on electricity is 20% and the excise tax is 7.5%.

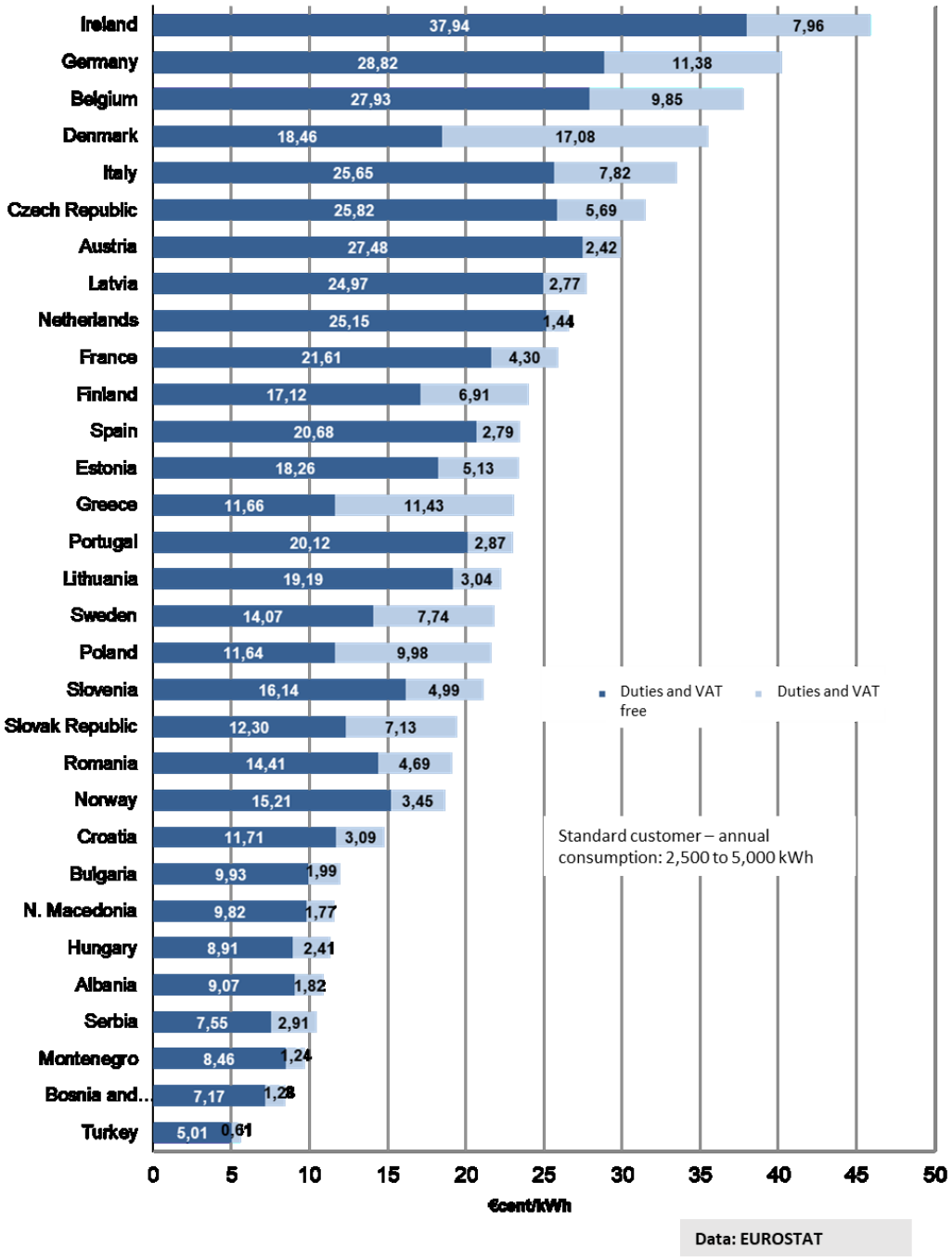

Figure 3-13: Electricity prices for households – second half of 2023

Figure 3-14 indicates a more detailed structure of retail electricity price for households in some of European capitals in December 2023. The data indicate that the energy price in Belgrade is low (the one in Budapest is the only one lower than in Belgrade).

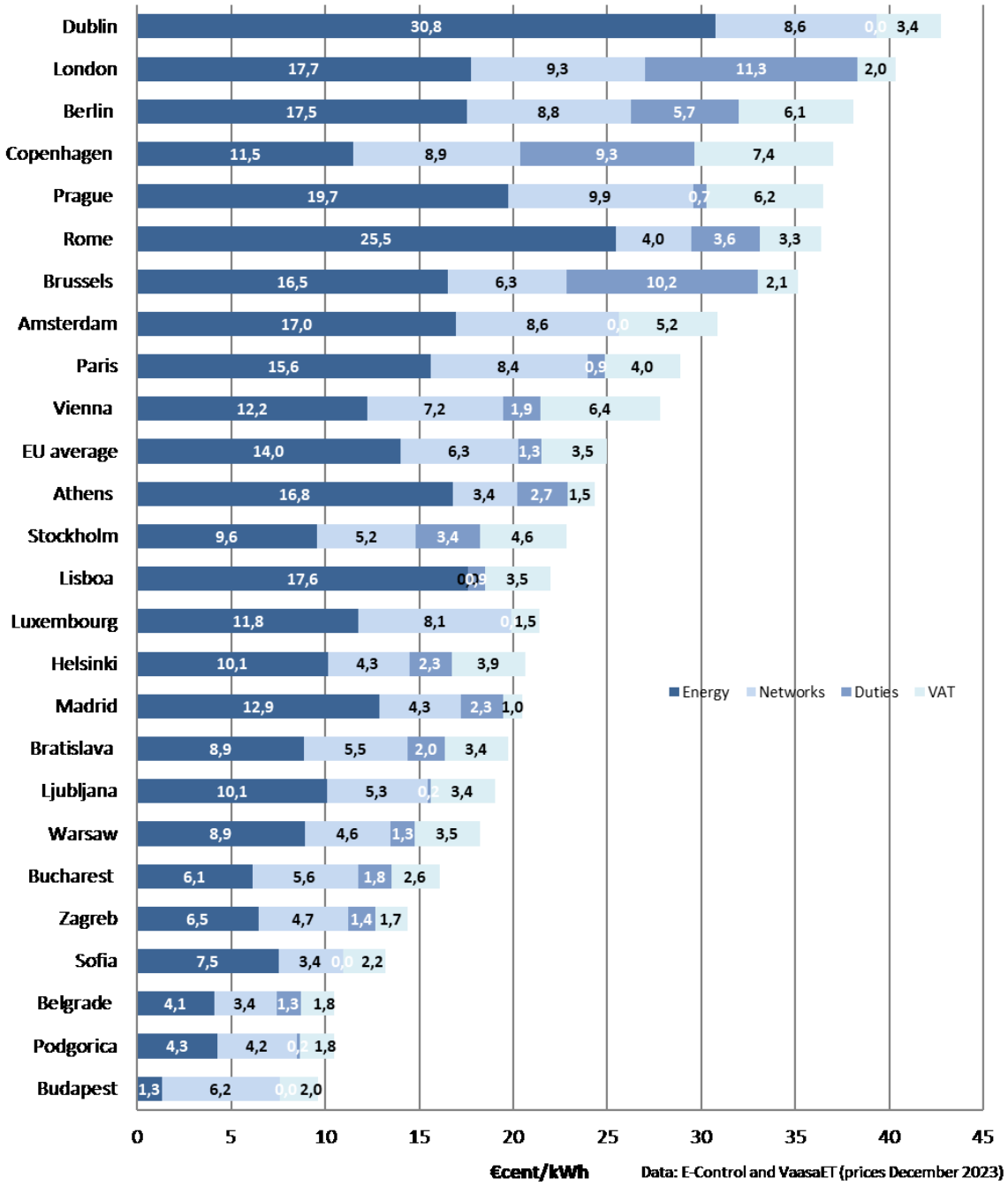

Figure 3-14: Structure of retail electricity price for households in some of European capitals in December 2023

So as to make a better comparison between electricity household prices, figure 3-15 indicates the structure of electricity final price for households at purchase power parity in come of European capitals in December 2023. In such a way, the differences in living standards which exist between different European countries were taken into account. In this case, only Helsinki, Luxembroug and Budapest have lower electricity household prices than in in Belgrade.

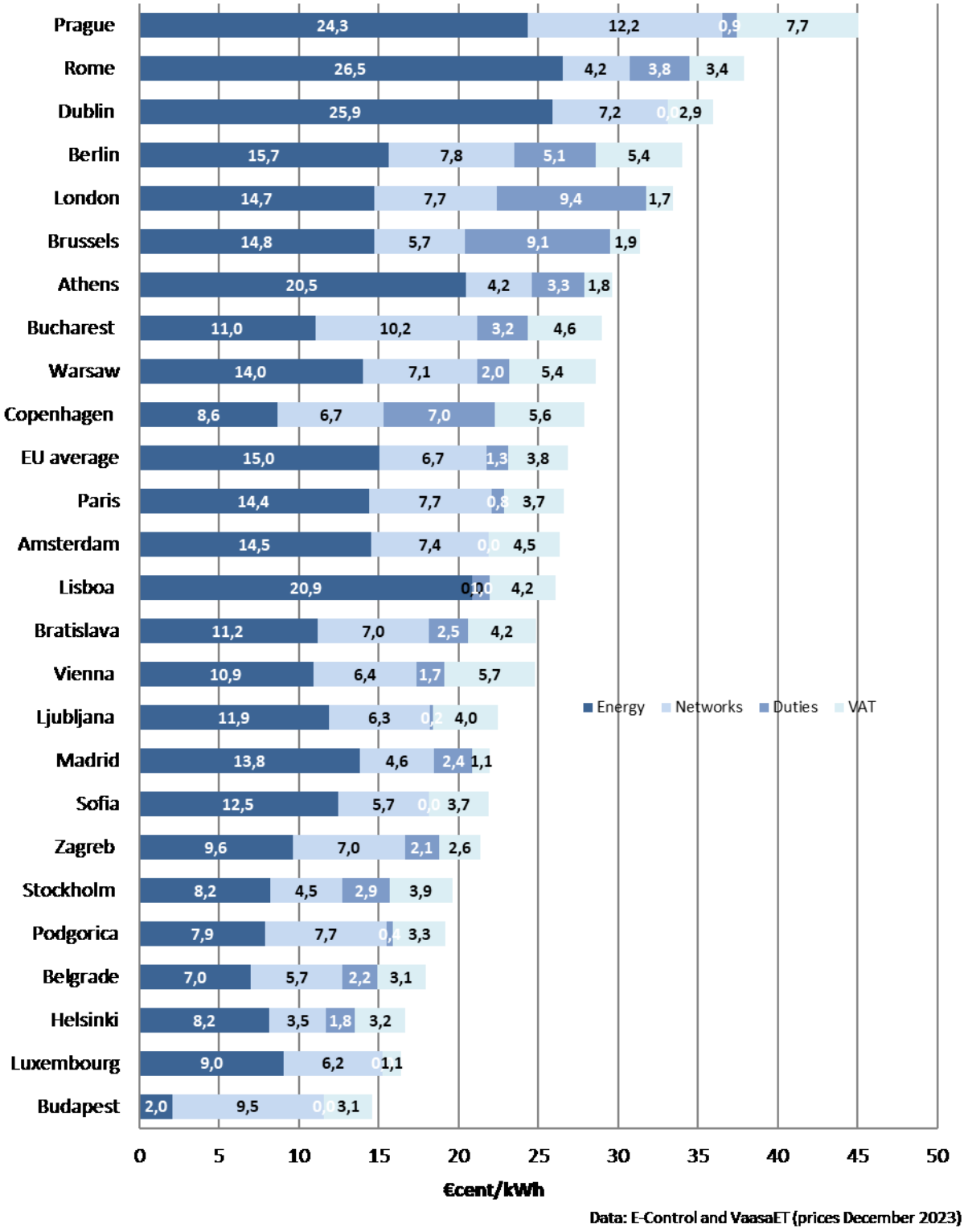

Figure 3-15: Electricity final price structure for households in some European capitals in December 2023 at purchase power parity

In the second half of 2023, the given prices in Serbia for reference customers for industry are higher in comparison to most countries in the region (Montenegro, Bosnia and Herzegovina, North Macedonia, Bulgaria and Albania) and in comparison to Turkey, Portugal, Sweden, Finland and Norway.

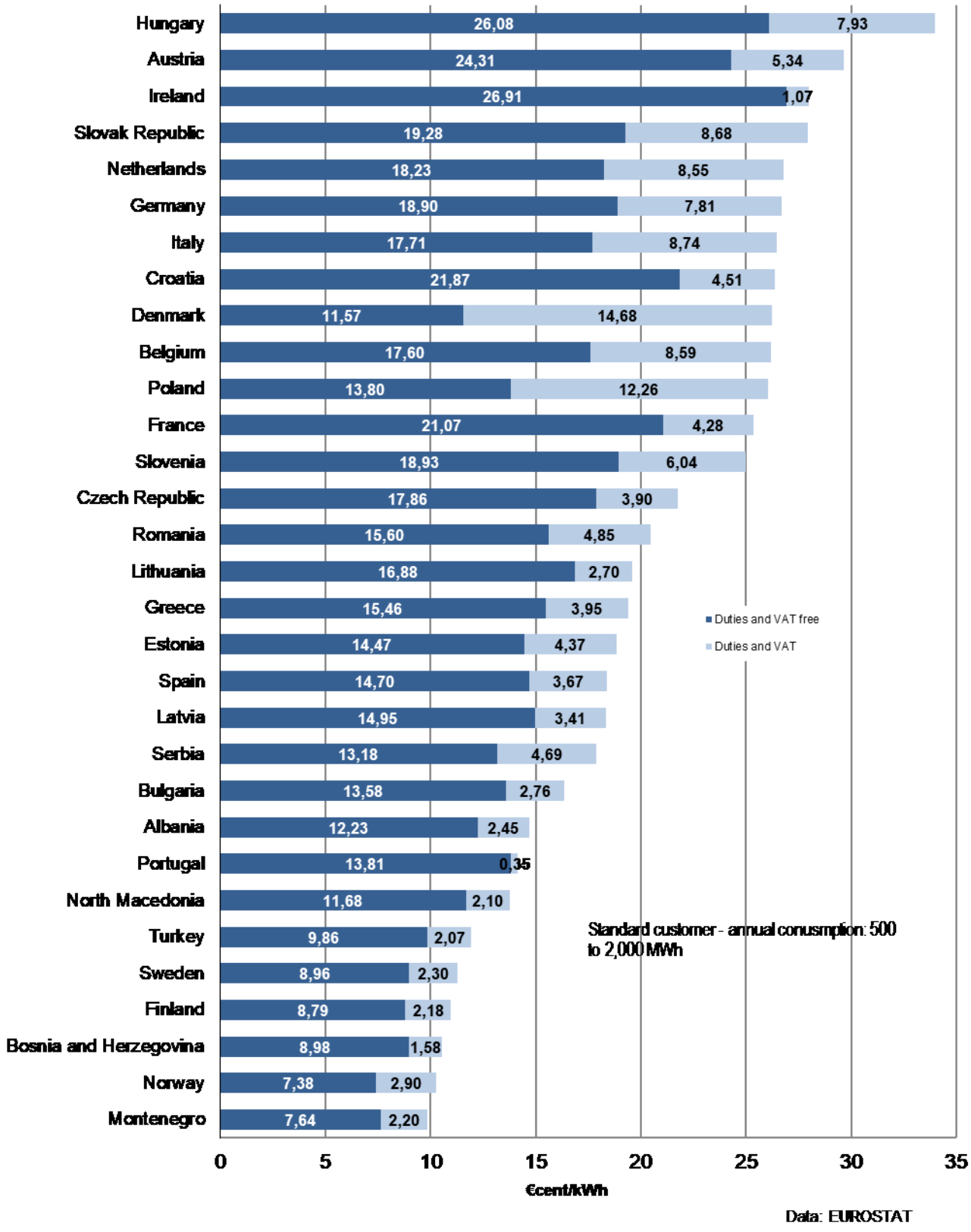

Figure 3-16: Electricity prices for industry – second half of 2023

3.6.1.2.4 Electricity sale in the open market

Since 2015, all final customers are entitled to purchase electricity in the open market. In 2023, 15,661 GWh of electricity were delivered in the open market, excluding the energy delivered via supply of the last resort, which amounts to 53% of final customers' consumption. To customers in the open market, electricity was delivered to 158 thousands metering points among which households account for 7 thousands (apartments owned by companies which purchase electricity in the open market).

Table 3-32: Electricity quantities delivered in the open market

Consumption category	Electricity quantities delivered in the open market (GWh)				
	2019	2020	2021	2022	2023
High voltage (110 kV)	2,637	2,653	3,019	3,262	3,455
35 kV	1,101	1,148	1,144	1,002	1,084
10 kV	6,176	6,105	6,560	6,860	6,944
Total high and medium voltage	**9,914**	**9,906**	**10,723**	**11,124**	**11,483**
Low voltage (0.4 kV I grade)	2,863	2,680	2,819	2,849	2,805
- 0.4 kV II grade	979	951	1,018	1,071	1,147
- households	14	17	20	22	48
Public lighting	491	478	461	422	390
Total low voltage	**4,374**	**4,126**	**4,318**	**4,364**	**4,390**
TOTAL open supply	**14,261**	**14,032**	**15,041**	**15,488**	**15,873**

Out of 76 energy entities which were licenced for electricity supply at the end of 2023, 3 of them were active in the open retail market which is 1 less than last year.

Table 3-33: Number of market players entitled for scheduling 2014 - 2023

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Number of market players	7	8	14	19	18	13	11	11	4	3

Suppliers who supply final customers in the open market:

1. *Акционарско друштво "ЕЛЕКТРОПРИВРЕДА СРБИЈЕ" Београд*
2. *"NOVA COMMODITIES" друштво са ограниченом одговорношћу, Београд*
3. *Друштво за истраживање, производњу, прераду, дистрибуцију и промет нафте и нафтних деривата и истраживање и производњу природног гаса "Нафтна индустрија Србије"а.д. Нови Сад*

Table 3-34: Open market concentration level in 2023

Suppliers' activity in 2022	Electricity quantity	Share of three suppliers with the biggest scope of trade		Herfindahl–Hirschman index HHI	Market concentration level
	(GWh)	(%)	(GWh)		
Sale of electricity to final customers in the open market					
Sale	15,098	100	15,098	9,991	High

Open market concentration level remained on the same level as last year. The quantity of electricity sold in the open market slightly increased in comparison to 2022 when 14,746 GWh were sold. Herfindahl–Hirschman Index (HHI) amounted to 9,991 and it increased in comparison to last year when it amounted to 9,968 which indicates and increase in the market concentration level in 2023.

Table 3-35: Electricity quantities sold to final customers in the open market - for each supplier in 2023

Supplier	Quantity (GWh)	Share (%)
Акционарско друштво "ЕЛЕКТРОПРИВРЕДА СРБИЈЕ" Београд	15,086	99.92
"NOVA COMMODITIES" друштво са ограниченом одговорношћу, Београд	12	0.08

Друштво за истраживање, производњу, прераду, дистрибуцију и промет нафте и нафтних деривата и истраживање и производњу природног гаса "Нафтна индустрија Србије"а.д. Нови Сад	0.2	<0.01

EPS JSC remained the dominant supplier with a share of 99.92% of the total electricity sold to final customers in the open market (without energy sold within vertically integrated company) and with the share of the total EPS JSC sale (guaranteed, of-the-last resort and open market) of 96.96% of the total final consumption.

Table 3-36: Average annual retail prices in the open market for final customers (VAT and duties free)

RSD/kWh

Consumption category	Average annual price				
	2019	2020	2021	2022	2023
High voltage (110kV)	6.05	6.43	6.93	9.16	12.92
35 kV	8.87	6.94	8.02	10.11	13.30
10 (20) kV	7.44	7.97	8.10	10.55	14.69
Total high and medium voltage	7.29	7.50	7.82	10.16	14.09
Low voltage (0/4 kV I grade)	10.24	10.24	10.66	13.50	17.39
- 0.4 kV II grade	9.94	10.15	10.77	13.47	17.43
- households	9.86	10.19	10.84	13.77	17.38
Public lighting	8.14	7.98	9.12	11.62	17.08
Total low voltage	9.93	9.95	10.52	13.31	17.38
TOTAL AVERAGE	8.13	8.25	8.63	11.09	15.04

The structure of retail prices in the open market in 2023 is given in the table below.

Table 3-37: Structure of realised average annual retail price in the open market for final customers

Elements	Price RSD/kWh
HIGH VOLTAGE - (110 kV) on transmission	
Total price	12.9
Transmission price	0.6
Electricity price	12.3
MEDIUM VOLTAGE (35 kV + 10 (20)kV)	
Total price	14.5
Distribution price	1.5
Electricity price	13.0
MEDIUM VOLTAGE - (35 kV)	
Total price	13.3
Distribution price	1.3
Electricity price	12.0
MEDIUM VOLTAGE - (10/20 kV)	
Total price	14.7
Distribution price	1.5
Electricity price	13.1
LOW VOLTAGE (0.4 kV I rate)	
Total price	17.4
Distribution price	4.1
Electricity price	13.3
MASS CONSUMPTION	
Total price	17.4
Distribution price	4.1
Electricity price	13.3
MC (Mass c.) – Commercial and other (0.4 kV II rate)	
Total price	17.4
Distribution price	4.1
Electricity price	13.3
MC - household	
Total price	17.4
Distribution price	3.9
Electricity price	13.5
PUBLIC LIGHTING	
Total price	17.1
Distribution price	3.6
Electricity price	13.5
TOTAL SALE ON DISTRIBUTION NETWORK	
Total price	15.5
Distribution price	2.4
Electricity price	13.1
TOTAL ON TRANSMISSION AND DISTRIBUTION NETWORK	
Total price	15.0
Network price	2.1
Electricity price	13.0

Being the supplier of the last resort, *EPS* JSC delivered 44 GWh of electricity to customers, i.e. 0.15% of the total electricity delivered to final customers. Electricity quantities delivered within the supply of the last resort regime for each consumption category for the period 2019-2023 are given in Table 3-38.

Table 3-38: Electricity quantities delivered under the supply of the resort regime

Consumption category	Electricity quantities delivered under the supply of the resort regime (GWh)				
	2019	2020	2021	2022	2023
High voltage (110kV)	12	12	15	0	0
35 kV	0	0	2	0	0
10 (20) kV	34	27	100	43	10
Total high and medium voltage	**46**	**39**	**118**	**43**	**10**
Low voltage (0/4 kV I grade)	31	18	54	32	18
- 0.4 kV II grade	15	4	29	23	10
- households	0	0	1	1	2
Public lighting	17	11	9	14	4
Total low voltage	**63**	**33**	**93**	**70**	**34**
TOTAL SUPPLY OF THE LAST RESORT	**109**	**72**	**210**	**113**	**44**

The structure of the realised average price of supply of the last resort for each voltage level separately and for customer categories and groups is given in the table below:

Table 3-39: Average annual price of the supplier of the last resort for final customers (VAT and duties free)

RSD/kWh

Consumption category	Average annual price				
	2019	2020	2021	2022	2023
High voltage (110kV)	9.12	9.01	9.04	12.29	-
35 kV	10.47	-	10.04	-	19.50
10 (20) kV	10.17	9.96	9.79	14.14	19.34
Total high and medium voltage	9.91	9.65	9.71	13.95	19.34
Low voltage (0/4 kV I grade)	12.40	11.95	12.33	17.49	21.57
- 0.4 kV II grade	12.17	12.38	11.97	17.52	21.82
- households	12.11	12.63	11.86	18.46	21.27
Public lighting	11.20	11.16	11.56	16.71	21.17
Total low voltage	12.02	11.75	12.13	17.33	21.55
TOTAL AVERAGE	11.12	10.55	10.70	16.67	21.04

The total realised average electricity price in the retail market in Serbia which relates to all types of trade in electricity amounts to 12.69 RSD/kWh or 10.83 €c/kWh, if calculated in line with the average Euro exchange rate for 2023. The structure of this total average price for each voltage level, customer category and group separately is given in the table below:

Table 3-40: Total average annual prices for regulated market, open market and supply of the last resort (VAT and duties free)

RSD/kWh

Consumption category	Average annual price				
	2019	2020	2021	2022	2023
High voltage (110kV)	6.07	6.45	6.94	9.16	12.92
35 kV	8.87	6.94	8.03	10.11	13.30
10 kV	7.45	7.98	8.13	10.56	14.70
Total high and medium voltage	7.31	7.50	7.84	10.17	14.10
Low voltage (0/4 kV I grade)	10.36	10.41	10.76	13.39	17.28
- 0.4 kV II grade	9.45	9.77	10.22	11.77	15.24
- households	6.88	7.14	7.37	7.61	9.94
Public lighting	8.19	8.01	9.12	11.66	17.06
Total low voltage	7.76	7.92	8.26	9.11	11.88
TOTAL AVERAGE	7.61	7.79	8.12	9.49	12.69

Except for the electricity meant to meet the demand of final customers, open market also provided for the energy meant for the recovery of losses in the transmission network.

The table below reviews all the realised average annual electricity prices for each activity in the electricity market in Serbia separately.

Table 3-41: Review of realised average annual prices for each activity in 2023

Activity	Structure	Price
		RSD/MWh
Wholesale market	Sale to other suppliers	16.46
	Sale on the exchange	12.17
	Export	20.94
	Total wholesale price	17.43
Transmission	Access to the transmission network	0.18
	Losses in the transmission network	0.33
	Ancillary services and capacity reserve	0.11
	Transmission – total	0.62
Distribution	Access to the distribution network	2.04
	Losses in the distribution network	1.44
	Distribution – total	3.47
Retail	Public supply at regulated prices	10.17
	Supply of the last resort	21.04
	Supply of eligible customers at market prices	15.04
	Retail – total	12.69
Other	Additional costs (taxes and duties)	4.73
Final customers – average (with additional costs and duties)		17.43
- industrial customers (out of the total number)		20.27
- households (out of the total number)		13.87

3.6.1.2.5 Supplier switching

Supplier switching procedure implies any voluntary switch of the final customer with the selected supplier in line with the Law and Rules on Supplier Switching. The procedure when final customers had to quit regulated public supplier “by the rule of the law” and select a supplier is not considered to be a supplier switching procedure since customers had to switch to the supply of the last resort before they selected their supplier.

Table 3-42: Supplier switching for metering points separately in 2023

Consumption category	Number of metering points			Electricity delivered (MWh, %)		
	Total	With the supplier switch	%	Total	At metering points with new supplier	%
High voltage	52	0	0	3,573,000	0	0
Medium voltage (35 kV)	135	2	0	1,084,192	0	0
Medium voltage (10 and 20 kV)	5,727	112	0.81	6,625,672	53,673	0.81
Low voltage - (0.4kV I grade)	42,351	1,092	1.94	2,978,675	57,788	1.94
Mass consumption – Commercial and other (0.4kV II grade)	353,598	8,170	2.27	2,117,274	47,978	2.27
Public lighting	23,769	2,015	4.12	398,154	16,400	4.12
Households	3,367,109	556	0.02	13,008,211	3,118	0.02
Total	3,792,741	11,947	0.31	29,785,179	178,957	0.60

The legal deadline for the completion of the supplier switching procedure amounts to 21 days as defined by the Rules on Supplier Switching. For those customers with facilities connected to the distribution system, for the supplier switching

procedure, it practically took the whole legal deadline of twenty-one days to complete the supplier switching procedure. In comparison to 2022, the total number of supplier switching procedures per delivery point decreased by 0.06 % and amounted to 0.31%, while the percentage of the share of electricity quantity which was subject to supplier switching decreased from 1.07% to 0.60%. In 2023, there was no supplier switching with customers with facilities connected to the transmission system (110 kV voltage level). There was a significant decrease in supplier switching on the distribution level with all customer categories.

3.6.2 Guarantees of origin

Guarantees of origin are electronic documents which have an exclusive function to provide evidence to a final customer that the given share or energy quantity which was delivered by a supplier was produced from the renewable sources. They include the piece of information on the characteristics of production for MWh of electricity and they are used for determination of the structure of sources which are used to provide the consumed electricity. Guarantees of origin provide electricity customers to express their interest for "green" energy and to stimulate power generation which contributes to power system development under environment-friendly conditions from their side.

In 2017, the Decree on Guarantees of Origin entered into force and a Rulebook on Method of Calculation and Presentation of Share of All Energy Sources in Electricity Sale was adopted. In December 2017, *EMS* AD Beograd adopted Rules on Issuance of Guarantees of Origin for the Republic of Serbia. On December 22, 2017, the Council of the Energy Agency of the Republic of Serbia approved the Decision on Fee for Issuance, Transfer and Cease of Validity of Guarantee of Origin which created all conditions for the beginning of a new market process – Issuance and Administration of Guarantees of Origin for Electricity in Control Area of the Republic of Serbia. During the General Assembly of the members of the Association of Issuing Bodies (AIB) which was held on September 27, 2019 in Reykjavik, *EMS* AD was awarded with the full-member status in AIB. In November 2020, after complying with all the conditions for full membership and following the provision of necessary insurance, *EMS* AD was connected to the AIB system (AIB HUB) and, thereby, both the export of guarantees of origin from Serbia into the countries which are the Association members and the import of the guarantees of origin into Serbia were enabled. Hereby, Serbia became the first Energy Community Contracting Party which became the member of the Association of Issuing Bodies.

Thereby power producers in Serbia were given an opportunity to sell the guarantees of origin all around Europe while, on the other hand, suppliers, who are obliged to provide insight into data on the share of all types of energy sources and on the data on total electricity quantities which were sold to a final customer, can provide guarantees of origin abroad, too.

EMS AD Beograd registers participants in the system of guarantees of origin and organizes informative presentations in order to provide all necessary pieces of information to interested parties and to make them familiar with new market process. The current structure of registered participants in the Registry of Guarantees of Origin reads:

- Eligible producer, supplier and wholesale supplier – 2
- Supplier and wholesale supplier – 5
- Eligible producer, supplier - 1
- Wholesale supplier – 11
- Supplier – 9
- Eligible producer - 16

The total number of issued guarantees of origin in the period from the first issued guarantee of origin (November 2018) until the end of December 2023 amounted to 13,001,528, while there were 10,581,175 guarantees of origin issued only in 2023 which is even 7 times more than in 2022 when there were 1,461,093 of them issued. The number of imported guarantees of origin in the period since import was enabled via AIB until the end of 2023 amounted to 513,465 out of which 240,465 of them were imported in 2023.The number of exported guarantees of origin in the period since (this year) it has become possible to export via AIB amounted to 7,157,411 until the end of 2023.

3.6.3 Electricity balancing market

The Energy Law and relevant amendments to the Rulebook on Energy Licensing and Certification, foreign companies were also allowed to obtain electricity wholesale licence and thereby gain the right to be registered as a balancing responsible party. In 2022, the Agency approved the adoption of new Electricity Market Network Code to EMS JSC. The Code amended segments related to electricity market participants, communication with market participants; registration of balancing responsible parties was optimised, an article defining the content of the Contract on Balancing Responsibility was regulated in more detail; the calculation of the level of risk in case of failure to act was amended. In addition, the segment related to explicit bids of market participants was amended as well as the segment related to the calculation of financial settlements of balancing responsible parties. At the end of 2023, there were 54 electricity market participants that had a Contract on Balancing Responsibility signed with the transmission system operator (*EMS* JSC) and that were awarded thereby with the status of a balancing responsible party (*BOS*). In 2022, the balancing group members were modified 53 times which was initiated by contracts on full supply between final customers and suppliers, contracts on transfer of balancing responsibility between suppliers and final customer and contracts on transfer of balancing responsibility between *BOS* and suppliers. In 2022, in line with the Contract on Ancillary Services and the Contract on Participation in Balancing Mechanism which *EMS* JSC signed with PE *EPS*, *EMS* JSC engaged balancing entities for secondary and tertiary control within its control area in order to maintain balance between total production, consumption and nominated electricity block exchange. In addition, they calculated deviations between balancing groups which served for financial settlement between *EMS* JSC and balancing

responsible parties on monthly level. In addition, in 2022, *EMS* JSC worked on the so-called cross-border balancing by engaging balancing energy in order to balance its control area in line with contracts on the exchange of cross-border tertiary control energy (*PTRE*) with neighbouring transmission system operators which included the engagement of manual cross-border frequency restoration reserve (emergency energy) and engagement of balancing reserve within settlement accounting period based on contracts with the transmission system operators of Montenegro (CGES) and Bosnia and Herzegovina (NOSBiH) on purchase and sale of tertiary control energy for system balancing purposes. In 2022, the Transmission System Operator *EMS* JSC was actively involved in regional and European initiatives on the organized electricity market coupling, cross-border electricity balancing market (observer in MARI project) as well as of the European project of single intraday electricity market. In October 2022, *EMS* JSC became an operable member of a common European exchange - deviations netting platform (IGCC). In line with a new Contract on CMM (Serbia, Montenegro and North Macedonia) Block Operation which was signed in late 2020 and harmonized with the latest European regulations, as of December 2021, an unwanted deviations netting mechanism of control areas within CMM Control Block (CMM GCC - Grid Control Cooperation) started operating and the Serbian TSO and CGES as the Montenegrin TSO participated in the exchange.

PTRE which was engaged during 2023 included the engagement of slow cross-border reserve (emergency electricity) and the engagement of balancing reserve within the calculation interval (based on contracts with CGES and NOSBiH) on purchase and sale of terciary control energy for system balancing purposes).

In 2023, total engaged balancing energy during all calculation periods amounted to 1,043.6 GWh[8], for which the total weighted settlement price amounted to 100.6 €/MWh. It amounts to 178.3 €/MWh less than last year. Bearing in mind the direction of activated balancing entities, the weighted settlement price amounted to 154.2 €/MWh for upward activation and 38 €/MWh for downward activation. In addition to this, the total energy engaged for endangered system security amounted to 16,363 MWh.

In 2022, a new energy registry of electricity market participants was developed – NERA (New Energy Registry for Applicants). It was successfully commissioned on 23/11/2022 which is used for the administration of balancing responsibility and of balancing groups team.

3.6.4 Organised electricity market

Pursuant to the Energy Law, organised market is an institutionally regulated relation between the supply and the demand between electricity market participants with standardised products and physical delivery determined in advance within the day-ahead and intraday time framework. On July 14, 2015, *EMS* JSC established SEEPEX JSC Belgrade – power exchange. It was established on the basis of partnership with EPEX SPOT. It was decided that in the beginning of operation SEEPEX would operate the organised market with standardized products in the “day-ahead” market.

The organised market (exchange) started operating in February 2016 and the review of the activities in this market is available on the website www.seepex-spot.com. In 2023, there were 45 participants registered in the power exchange which means that there were seventeen more participants than in 2022. 33 participants were active in the trade, which is ten more than in 2022. Day-ahead auctions product is available on the exchange and there are two methods for bidding: individual and block bid. Individual bid includes up to 256 price/quantity combinations for each individual hour of the following day, where prices have to be between 0.0 €/MWh and 3,000 €/MWh. Block bid, which was introduced on SEEPEX on March 22, 2017, is the bid which connects several hours in line with the principle “all or nothing” which means that the bid is either accepted for all the hours or it is completely rejected. It is possible to insert different electricity quantities for each block hour while there is one price offered for the whole block. With the introduction of curtailable blocks on 15/12/2021, the options of block offers were expanded in a manner that “all or nothing” rule is relaxed by the definition of Minimum Acceptance Ration of the offer the applicant is ready to accept.

Since 2018, *EMS* JSC has been purchasing electricity for loss recovery via auctions which are organized by *EMS* JSC on the electronic platform i.e. so-called Auction Platform. Missing quantities are purchased on organized day-ahead electricity market in Serbia – SEEPEX exchange. Auction participants are companies licenced for electricity supply which complied with conditions prescribed by *EMS* JSC beforehand and which had a framework contract concluded with *EMS* JSC. In addition, during some periods, in line with the Law, due to lower loss levels than expected, *EMS* JSC sold extra electricity meant for loss recovery which was purchased via auction platform on the power exchange – SEEPEX.

On December 23, 2022, transmission system operators from Slovenia and Serbia, along with EPEX SPOT, established the first regional electricity exchange for Central and Southeastern Europe – the Alpine-Adriatic Danube Electricity Exchange (ADEX). The founders are ELES, EMS, and EPEX SPOT. ADEX was created through the corporate merger of BSP SouthPool and SEEPEX, with its corporate headquarters in Ljubljana and main offices in Ljubljana and Belgrade.

The total electricity volume which was subject to trade on day-ahead organised market SEEPEX in 2023 amounted to 4,680,359 MWh which is by 46% more than in 2022. The share of electricity which was traded on the power exchange in comparison to the electricity volume which was delivered to all final electricity customers was 15.5% while 29.3% is the exchange share in comparison to electricity volume delivered to final customers supplied in the open market (open retail market without energy sold to system operators for system losses). In 2023, the highest monthly trading volume on the intraday market was achieved in November, totaling 451,086 MWh, with the daily peak occurring on March 14, at a trading

[8] Data received until February 15, 2022 and subject to modification in line with Electricity Market Rules.

volume of 22,781 MWh. The lowest monthly trading volume was in January, amounting to 311,913 MWh, which is 34% higher than the minimum month of the previous year. The highest hourly price was reached on September 12 at 8:00 PM, at 318.3 €/MWh. The average annual base price was 103 €/MWh, which is 2.6 times lower than the previous year.

In July 2023, the intraday market organized on SEEPEX began operations, and throughout 2023, the total trading volume reached 3,960.2 MWh. The highest monthly trading volume was recorded in November 2023, amounting to 5,592.2 MWh.

3.6.5 Transparency

In line with the Treaty establishing the Energy Community and with the decision of the Permanent High Level Group Ministerial Council of June 24, 2015, the Republic of Serbia assumed an obligation to transpose the EU Transparency Regulation 543/2013 into national legislation. This Regulation defines the data and deadlines within which these data should be published in order to increase the electricity market transparency. In line with the Energy Law, this Regulation is transposed into our legal framework by having the Assembly of the Joint Stock Company "*Elektromreza Srbije*" Beograd adopted Rules on Publication of Key Market Data which were approved by the Agency Council on the session held on December 9, 2016. These rules establish obligations of the electricity transmission system operator, electricity distribution system operator, closed electricity distribution system operator, electricity producer and final customer related to the publication of all relevant data on consumption, transmission, production and balancing market. All key market data, except for those defined in transitory and final provisions are published on the ENTSO-E transparency platform (EMFIP – Electricity Market Fundamental Information Platform on the website https://transparency.entsoe.eu) in line with deadlines defined by these Rules. In 2023, as well as in 2022, *EMS* JSC submitted 99% of the total number of data defined by the EU Regulation 543/2013 on transparency on the EMFIP platform. As of September 1, 2019, Rules on the Publication of Key Market Data which are harmonized with amendments to guidelines for the implementation of the EU Regulation 543/2013 which were adopted by ENTSO-E are applicable. In line with the Law on Amendments to the Energy Law adopted on 22/04/2021, in late 2021, the Agency approved amendments to the Rules which were submitted by EMS JSC and which related to the publication of data on production realised in each production unit, on electricity production from solar and wind and the forecast of production of electricity from solar and wind for day ahead. These Rules entered into force as of 23/03/2022. Within the Energy Community Regulatory Board (ECRB), in 2023, the compliance with the requirements of the EU Regulation 543/2013 on data publication which is valid for the Energy Community Contracting Parties was monitored via automatized platform within the website of the Energy Community Secretariat. The platform began operating in 2022 and it facilitated the data update procedure as well as the access of interested parties to these pieces of information.

3.6.6 Regional coupling

A set of activities relevant for the whole region are organised within the Energy Community (EnC), with active participation of the Agency representatives.

Wholesale market

In line with the decisions of the Energy Community Ministerial Council 2021/13/MC-EnC of 30/11/2022 and 2022/03/MC-EnC of 15/12/2022 which enabled the adaptation of the EU regulations in the electricity field, the Republic of Serbia was obliged to transpose these regulations into national legislation until the end of 2023. The adoption of adapted EU Directives and Regulations, particularly of those representing the so-called network codes which are important for the electricity market functioning and for the operational work of power systems is aimed at the creation of conditions for more accelerated integration of electricity market in the Western Balkans into a common Pan-European electricity market of the EU as well as for the harmonisation of procedures in the field of system operation and balancing. This regulatory package includes: Procedural Act on Regional Market Integration 2022/PA/01/MC; Directive (EU) 2019/944 common rules of internal electricity market; Regulation (EU) 943/2019 on electricity; Regulation on ACER 942/2019; Regulation (EU) 2019/941 on risk-preparedness in the electricity sector; Regulation/Network Code (EU) 2016/1719 (FCA) on capacity allocation; Regulation/Network Code (EU) 2015/1222 (CACM) on capacity allocation and congestion management; Regulation/Guidelines (EU) 2017/2195 (GLEB) for balancing; Regulation/Guidelines (EU) 2017/1485 (SOGL) on transmission system operation; Regulation/Network Code (EU) 2017/2196 on emergencies and the transmission system re-establishment. During 2023, the Agency actively participated in the work on amendments to the Energy Law to fulfill this obligation. The Energy Community Secretariat organized several virtual workshops throughout 2023 to assist the regulatory body in meeting this requirement. The project on the establishment of the Coordinated Auction Office in the SEE, aimed at harmonisation of the allocation rules and nomination of rights for the use of cross-border capacity on both long-term and short-term level in the eighth region[9] was developed since 2008 in several phases. The Office was established in April 2014 in Podgorica and it gathers founders – transmission system operators from BiH (NOS BiH), Croatia, (HOPS), Montenegro (CGES), Kosovo* (KOSTT), Albania (OST), North Macedonia (M*EPSO*), Greece (IPTO) and Turkey (TEIAS). The Office covers cross-border capacity allocation on seven borders. The Transmission System Operator of Serbia (*EMS*, JSC) did not participate in the establishment of the Office.

[9] One of 8 European regions within which regional electricity markets are developed which are being integrated in the EU market. The region includes Albania, Bosnia and Herzegovina, Serbia, Montenegro, Kosovo*, Macedonia, Slovenia, Croatia, Hungary, Romania, Bulgaria, Greece and Italy with the future undersea cable.

During 2023, EMS AD used the services of the JAO office for coordinated capacity auctions at the borders with Croatia and Bulgaria, and an agreement was also made for allocation at the border with Hungary starting from 2024.

The Transmission System Operator *EMS* JSC concluded contracts on the exchange of emergency energy or the exchange of cross-border tertiary control energy (*PTRE*) in cases when the safety of operations of the power system and/or supply of customers in the country is endangered, on natural exchange basis or on commercial basis. *EMS* JSC concluded multiannual contracts on emergency energy exchange on commercial basis with transmission system operators of Hungary (MAVIR) in 2019, Croatia (HEP-OPS) in 2018 and Romania (Transelectrica) in 2017. The contract on emergency energy exchange signed on natural basis for indefinite period of time between *EMS* JSC and the Bulgarian transmission system operator was valid. Contracts on the exchange of cross-border tertiary control energy between *EMS* JSC signed with Montenegro (CGES), North Macedonia (MEPSO) and Bosnia and Herzegovina (NOS BiH) were valid. These contracts imply a possibility to have five-minute energy activation within an hour for the control in both directions with a price which depends on the bids within the national balancing mechanism.

In previous years, EMS JSC gradually began to enter into multi-annual agreements on cross-border transmission capacities related to the mutual allocation of cross-border transmission capacities between trading zones with all neighboring transmission system operators. The harmonization of cross-border electricity exchange within transmission system operation planning and calculation of exchanged electricity became a narrow expert field which is regulated by separate agreements (Scheduling Agreement and Accounting Agreement). In the previous period, Scheduling Agreements were concluded with all neighboring transmission system operators. Accounting Agreements were also concluded with all neighboring transmission system operators and are continuously improved to account for changes in data on power lines and the introduction of new physical and virtual power lines. An Accounting Agreement was also signed between EMS JSC and TransnetBW (Germany) to record exchanges made during the process of balancing deviations at the European level.

Market monitoring

Within the Energy Community, great attention is paid to the development of tools and databases for electricity and natural gas market monitoring. As early as in 2015, there were negotiations between ACER and EnC Secretariat on the types of cooperation between ACER and ECRB working groups in order to follow the activities in the EU more easily and implement the EU mechanisms in the Energy Community Contracting Parties. Under the Memorandum of Understanding between ACER and the Energy Community Secretariat, signed in 2016, it was agreed that the Contracting Parties would oversee the wholesale and retail electricity markets using indicators from ACER. From 2016 to 2020, the ECRB working groups for electricity and for consumers and retail markets conducted market oversight within their activities according to the indicators used by ACER for market oversight in the EU, to the extent applicable to all Energy Community Contracting Parties, considering the varying levels of market development compared to EU member states, and publishing the annual ECRB report. In 2020, an agreement was reached between ECRB and ACER to include the Contracting Parties' data on wholesale electricity market oversight in ACER's market oversight report, in an agreed scope and structure. Thus, for the first time, the ACER market oversight report for 2020 included a report on the Energy Community Contracting Parties within an annex published in November 2021. ACER did not publish a market oversight report for 2021-22 in the usual format, and thus data for the Energy Community Contracting Parties was not published. In 2023, data collection from the Contracting Parties began for the preparation of ACER's report in the new format.

Based on the Guidelines for Regulatory SEE Market Monitoring which were approved by the ECRB in 2014, during 2023, there were periodical assessments on whether the market was functioning in line with the adopted rules and on the basis of transparency and non-discrimination principles in terms of calculation of available cross-border capacity and organised allocation procedures. The implementation of these Guidelines aims at the establishment of a harmonised approach to regulatory tasks and an introduction of a possibility for regional market monitoring. However, the Guidelines are not legally binding. The Guidelines also include recommendations to regulators from the region for the collection of necessary data for monitoring use of cross-border capacities.

Regarding electricity market monitoring in the Southeast European region, within the activities of ECRB, issues were identified in the use of the SEEAMMS internet platform software in 2023. This platform aims to detect deviations in indicators related to the calculation of available cross-border capacity and allocations made in accordance with the Guidelines for Regulatory Market Monitoring in Southeast Europe. Throughout 2023, discussions were held on how to overcome these issues to ensure the continued rotation of Contracting Parties as administrators of the SEEAMMS platform.

In 2023, within the ECRB Working Group for Customers and Retail Market, data were collected and a report was made on retail electricity market monitoring based on data from 2022.

By the adoption of the Regulation 1227/2011 on Integrity and Transparency of Wholesale Energy Market (“Light REMIT”), by the Decision of the Energy Community Ministerial Council in November 2018, ECRB established a new working group. The main tasks of the group imply the preparation of regulators for new jurisdiction both on the national level and on the Energy Community level in line with the “Light REMIT” Regulation. A Procedural Act was drafted by the working group, i.e. regulatory recommendation was drafted and the Energy Community Regulatory Board adopted it on August 7, 2020. The purpose of this regulatory recommendation is to: 1) establish the ground for the coordination of national regulatory bodies of the Contracting Parties in the field of their tasks arising from the “Light REMIT” Regulation; define the cooperation process via ECRB; 3) harmonise formats used by regulators; 4) make a draft of actions to be taken by the ECRB and 5) settle issues of confidentiality related to the data and information exchange. On the session held on October 28, 2021, the Council of the Energy Agency of the Republic of Serbia adopted Rules on Prevention of Abuse on Electricity and Natural Gas Markets.

These rules regulate conditions for the registration of wholesale electricity and natural gas market participants – conditions for publication of inside information, prohibition of trade in inside information, prohibition of market manipulation, type, content, form, manner and deadlines for the creation and publication of data, data protection, professional secret, operational responsibility and obligations of the person who regulates transactions as a professional. The rules were adopted in line with commitments of the Republic of Serbia assumed by ratified international treaties and by the law regulating the energy field.

3.7 Monitoring and regulation of the quality of delivery and supply

The Council of the Agency adopted Rules on Monitoring Technical and Commercial Indicators and on Regulating Quality of Electricity and Natural Gas Delivery and Supply (Rules on Quality) in 2013. Rules on Quality were adopted on the basis of the gathered experience in data collection and monitoring electricity delivery and supply quality indicators as well as of international practice in the quality monitoring of services provided by energy entities. The Rules are established in order to define more closely the indicators of technical and commercial quality of delivery and commercial quality of electricity supply, the method of registering data and calculation of indicators, method and deadlines for the submission of data and reports to the Agency, harmonisation the method of data registering and calculation of quality indicators which enables the establishment of a base of complete, reliable and comparable data and calculated indicators in order to compare and regulate them. The collected data and calculated indicators should provide the prescription of the method of setting required values of certain indicators as well as the method of assessing results achieved by monitoring the reached results in comparison to the required indicators values of quality in future amendments of the Rules on Quality. Upon that, the procedure in case of deviation from demanded indicators' values will be also defined afterwards as it is defined in the Energy Law. In 2022, the data on quality of delivery and supply which were submitted by energy entities during previous years which will be used as the basis for the amendment of the Rules and their harmonisation with the Law. The collection of data on delivery and supply quality was established in line with the Rules on Quality by defining the type, scale and format of the data and indicators on technical and commercial aspects of quality as well as the deadlines for the submission of them by energy entities to the Agency. As is was the case in the past when the practice and infrastructure necessary for registering data, indicators calculation and reporting on quality was improved, in 2022, the distribution system operator continued with these activities, especially in the field of registering continuity of delivery.

3.7.1 Continuity of electricity delivery

Electricity transmission and distribution system operators monitor the continuity of electricity delivery regularly and these data indicate the number and duration of planned and unplanned delivery interruption. The entities submit monthly reports for all interruptions in the transmission and distribution network longer than 3 minutes. These reports are submitted to the Agency and the data on interruptions present the basis for the calculation of annual interruption indicators from the transmission and distribution network, for planned and unplanned interruptions and in total in the 2011-2023 period.

3.7.1.1 Transmission network continuity of delivery

Indicators of discontinuity of delivery from the transmission network which are monitored and calculated are the following:

- Power failure – undelivered power [MW] – total failed power on all measuring points where supply was interrupted;
- ENS [MWh] – total undelivered electricity;
- ENS [%] – a share of undelivered electricity in total delivered electricity;
- AIT [min] – average interruption duration in minutes, a quotient of undelivered electricity and average power.

Compared to 2022, the indicators for unplanned outages in 2023 have significantly worsened, both in terms of unmet electricity supply and lost generation capacity, and are two and a half times worse than the five-year average. Analyzing the data provided on the causes of outages, it is evident that force majeure had the most significant share in 2023. The impact of outages caused by other energy entities in 2023 was 15.87%, which is a significant improvement compared to 2022 when this share was 62%. Unplanned outages caused by transmission system failures, or those caused by the transmission system operator itself, increased from 25% in 2022 to 63% in 2023.

The indicators for power failure and undelivered electricity for planned and unplanned interruptions in the last ten-year period are given in table 3-43.

Table 3-43: Indicators of discontinuity in delivery within the transmission network in the period 2014 - 2023

Interruptions		Power failure – undelivered power	ENS	ENS
		MW	MWh	%
2014				
	Planned	115	110	0.0020
	Unplanned	1,905	3,496	0.0020
	Total	2,020	3,605	0.0040
2015				
	Planned	359	1,543	0.0003
	Unplanned	2,292	1,659	0.0104
	Total	2,351	3,202	0.0107
2016				
	Planned	167	547	0.0046
	Unplanned	1,693	1,317	0.0049
	Total	1,860	1,864	0.0095
2017				
	Planned	306	1,496	0.0016
	Unplanned	1,980	1,418	0.0039
	Total	2,286	2,914	0.0055
2018				
	Planned	350	1,552	0.0044
	Unplanned	1,059	826	0.0042
	Total	1,409	2,378	0.0086
2019				
	Planned	429	1,065	0.0024
	Unplanned	832	595	0.0013
	Total	1,261	1,660	0.0037
2020				
	Planned	676	1,162	0.0032
	Unplanned	2,856	978	0.0017
	Total	3,535	2140	0.0049
2021				
	Planned	495	1,340	0.0035
	Unplanned	1,147	1,403	0.0029
	Total	1,642	2,743	0.0064
2022				
	Planned	925	1,034	0.0039
	Unplanned	791	819	0.0041
	Total	1,716	1,853	0.0080
2023				
	Planned	13,771	1,150	0.0034
	Unplanned	13,042	2,293	0.0068
	Total	26,813	3,443	0.0103

Figure 3-17 indicates all the causes of unplanned interruptions and their share in the quantities of energy which was not delivered to all transmission system users in 2023. Unplanned interruptions caused by the transmission system operator in the previous year are significantly higher compared to the previous year. For user connection points to the transmission system, consumers at the 110 kV voltage level, where the allowed outage duration in one calendar year is 240 minutes, there was one exceedance of the allowed time at TS Valjevo 1 in 2023. This was due to a permanent fault on the 110 kV line TS Valjevo 1 – TS Kosjerić lasting 854 minutes. The loss of power was 13 MW for 26 minutes (35 kV and 10 kV distribution areas supplied by TS Valjevo 1) and 4 MW for 828 minutes (35 kV and 10 kV distribution areas supplied by TS Valjevo 1). The total duration was 854 minutes, during which the 110 kV voltage was continuously present at the 110 kV busbars in TS Valjevo 1.

On November 8, 2023, at 23:56, a phase conductor of the 110 kV line TS Valjevo 1 – TS Kosjerić fell onto the conductors of the 35 kV and 10 kV distribution network originating from TS Valjevo 1.

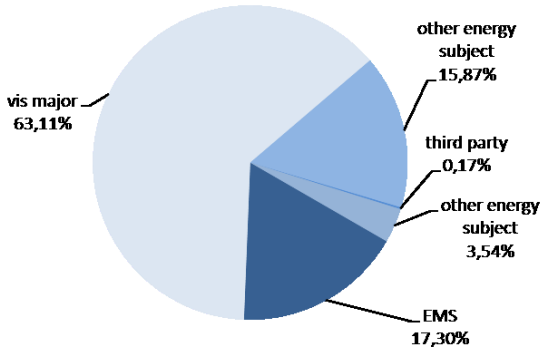

Figure 3-17: Causes of unplanned interruptions and their share in undelivered energy for all transmission system users in 2023

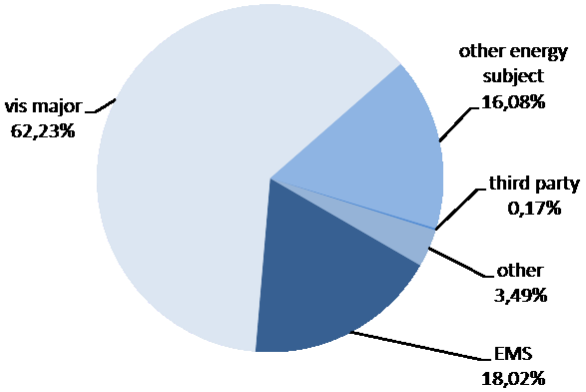

Figure 3-18: Causes of unplanned interruptions and their share in undelivered energy for transmission system users (excluding pumped-storage hydro power plants, storages and pumped-storage facilities) in 2023

The values of the most frequent indicator of discontinuity within the transmission network AIT are given in Figure 3-19, separately for planned and unplanned interruptions and in total.

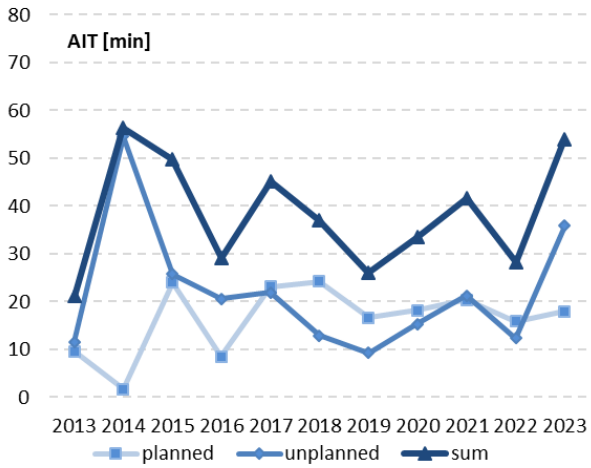

Figure 3-19: Average duration of supply interruption

In 2023, in comparison to 2022, there was an increase in the average duration of planned interruptions from 15.86 minutes to 17.99 minutes. Average duration of unplanned interruption was considerably longer than last year and it amounts to 35.89 minutes which is almost three times more than 12.31 minutes which was the case last year.

3.7.1.2 Distribution network continuity of delivery

The indicators for the estimation of discontinuity of delivery from the distribution network are the following:

- SAIFI[10] – average frequency of interruptions per each user, and
- SAIDI[11] – average duration of interruptions in minutes per user.

The indicators of continuity of delivery in the distribution network for the period 2019-2023, separately for planned and unplanned interruptions and jointly are given in Figure 3-20.

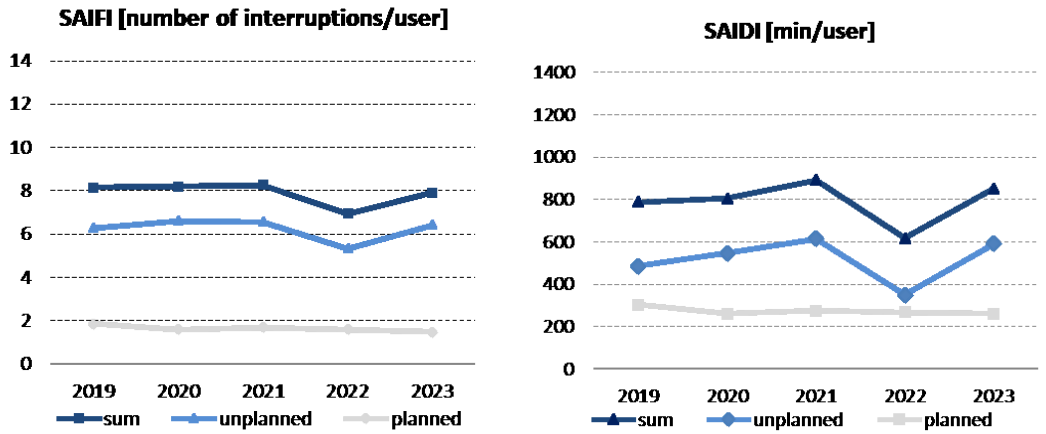

Figure 3-20: SAIFI and SAIDI for the period 2019 - 2023

There was a deterioration with both with continuity indicators for unplanned interruptions in the distribution network in Serbia in 2023 in terms of indicators of average duration of interruption as well as with indicators of average frequency of interruptions. Average frequency of unplanned interruptions was increased from 5.33 to 6.42 interruptions per user, while average duration of unplanned interruptions per user increased by 142 minutes, from 348 to 590 minutes. Average frequency of planned interruptions decreased from 1.6 to 1.5 interruptions per user while the average duration of planned interruptions per user decreased by 7 minutes, from 268 to 261 minutes. Indicators values are on the level of last five years which is significantly higher than in the EU countries[12]. This indicates that it is necessary to analyse the reasons for such situation in the distribution level more seriously. In line with the results of such an analysis, necessary measures aiming and the reduction of the number and of the duration of supply interruptions should be implemented. The causes of unplanned interruptions and their share in the total number and duration of interruptions are indicated in Figure 3-21.

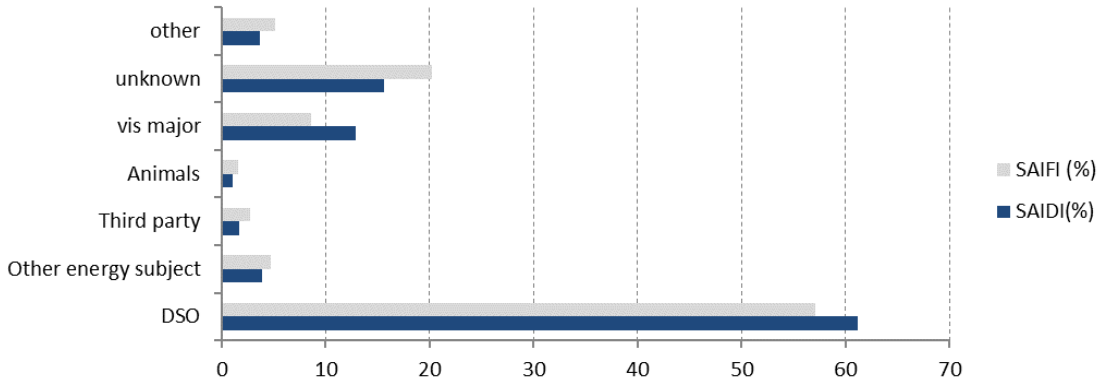

Figure 3-21: Share of causes of unplanned interruptions in SAIFI and SAIDI for 2023

The share of individual causes of outages in terms of both the number and duration of unplanned outages shows only slight variations compared to 2022. The proportion of unplanned outages that the Transmission System Operator (TSO) could not influence is slightly lower than the previous year, while the level of outages with unknown or other causes is significantly

[10] calculated as a quotient of the cumulative number of interruptions and total number of users [number of interruptions/user]

[11] calculated as a quotient of cumulative duration of interruption and total number of users [min/user]

[12] 6th CEER Benchmarking Report on the Quality of Electricity and Gas 2016.

higher than the previous year. The number of unplanned outages caused by the TSO has been considerably reduced in terms of the frequency of outages, although the duration of these outages has only slightly decreased. The portion of causes categorized as "unknown" and "other" remains significant, indicating that better identification of outage causes is still needed. This is a prerequisite for implementing more effective measures to address the causes of outages and reduce both their number and duration.

3.7.2 Quality of electricity

The Rules on Monitoring Technical and Commercial Indicators and Regulation of Quality of Electricity Delivery and Supply defined the obligation of the system operators to record disruptions in the operations which cause the voltage and frequency to exceed the limits prescribed by the Decree on Electricity Delivery and Supply Conditions and Transmission, i.e. Distribution Network Code. In practice hitherto, system operators did not submit the reports on bad voltage conditions within the grid to the Agency, except in terms of users' appeals which are being monitored within commercial quality area.

3.7.3 Commercial quality

Rules on Monitoring Quality Indicators define the data which system operators, i.e. suppliers register so as to enable commercial quality monitoring, i.e. monitoring compliance with the prescribed obligations as regards an energy entity's obligations towards customers, i.e. services users.

Based on Agency's request, energy entities submitted reports on commercial aspects of quality to the Agency regularly. That has provided the data for the calculation of some indicators of commercial quality on national level since 2009. After the market was opened in 2013 for customers connected to the transmission system and in 2014 for all customers, except households and small customers, there has been significant change in the necessity of monitoring commercial quality since the data on commercial quality are submitted to the Agency by all suppliers who supply final customers apart from by the system operator. In 2023, for the purpose of commercial quality monitoring, Distribution System Operator, closed distribution system operators, electricity suppliers and guaranteed/public supplier submitted quarterly reports and final annual report with available data to the Agency.

In terms of commercial quality monitoring, Distribution System Operator has improved the method of data recording considerably, but, even so, recording data on commercial quality has not still reached the expected level of reliability and accuracy which could provide a relevant analysis of the indicators in the national and international framework, especially in the field of data on call centres and metering device control. By having a greater number of customers entering the market, a necessity to monitor commercial quality introduced with licensed electricity suppliers as well was recognized. Further improvement of quality monitoring is also necessary with electricity suppliers, in particular with reference to customer care and the establishment of call centres.

For analytical purposes, the collected data were grouped in four main categories of biggest importance for customers which describe commercial quality. They include:

1) connection, load shedding and disconnection;
2) metering and billing;
3) removal of technical obstacles in delivery and
4) customer services.

The given data, especially those on average time for the performance of certain obligation are of indicative character since they were calculated on the basis of the available sets of data submitted by the distribution system operator. The analysis of these data proved that they do not include the whole territory of the distribution system since the data on the time of settling or removal of some of problems for certain segments of the distribution system are not available.

3.7.3.1 Connection, load shedding and disconnection

The Distribution System Operator data on applications for connection to the system in 2023 are given in Table 3-44 for different voltage levels, for medium voltage (MV), low voltage (LV) separately and in total.

Table 3-44: Connection applications by voltage levels and in total in 2023

Connection applications			MV	LV	Total
Number	of submitted applications		1,269	45,455	46,724
	of settled applications	Connection application approved	587	20,131	20,718
		Connection application denied	7	171	178
		Settled otherwise	197	19,807	20,004
		Total	791	40,109	40,900
		Within deadline (8 days for final customers, 15 days for producers)	448	14,764	15,212
%	Settled applications in comparison to the submitted ones		62	88	86
	Applications approving connection in comparison to the number of settled ones		74	50	51
	Settled applications within deadline (8 days for final customers, 15 days for producers)		57	37	37

Average time	Necessary for settlement upon application Given in days (final customers/producers)	21/45	25/36	25/40

In comparison to 2022, the number of submitted applications for connection was by 74% higher for connections to the medium voltage network while it was by 47% higher for the low voltage network. The number of decisions approving the connection was by 15% higher than in 2022 for connections to the medium voltage network while it was by 3% lower for connections to the low voltage network in comparison to the last year.

Average time necessary for settling applications for connection for final customers amounts to between 20 and 25 days depending on the voltage level stated in the application which is considerably beyond the legal deadline for settling connection applications for final customers which amounts to 15 days.

In 2023, 1,634 facilities/metering points more were connected than in 2022. Indicators describing connection of facilities/metering points (Table 3-44) improved on medium voltage. 91% of connections were performed while the average time necessary for connection since the day conditions are met was on the same level as last year and it amounted to 5 days. On low voltage, indicators describing connection of facilities/metering points deteriorated in comparison to last year by 11% and therefore, 81% of connections were performed within 15 days. The average time necessary for connection since the day conditions are met amounts to 8 days as was the case last year.

Table 3-45: Connection of facilities/metering points by voltage levels in 2023

Connection		MV	LV	Total
Number	of connected facilities/metering points	156	45,252	45,408
	of facilities connected/metering points within 8 days' period	142	36,505	36,647
%	of facilities connected/metering points within 8 days' period	91	81	81
Average time – given in days	Necessary for connection since the day all the conditions are met	5	8	8

In 2023, there were 30,970 disruptions upon suppliers' request, registered due to unsettled liabilities as regards electricity in the prescribed deadline, which is by 9% more than in 2022. The average time of reconnection upon the removal of causes of disruption/disconnection amounted to 2 days, i.e. upon unjustified disruption/disconnection, it amounted to 1 day on the level of the distribution system operator, while in different areas which correspond geographically to prior electricity distribution companies, it amounted to between 1 and 3 days and it is corresponds to the values in the previous year.

3.7.3.2 Metering and calculation

Regular control of meters were planned for 3,777,093 meters in 2023 (which accounts for 99.35% out of total 3,792,741 of metering devices) and 124,036 of them were checked, i.e. 3.3% of the planned checks. Out of the number, with 15,098 meters, i.e. 12% of them, irregularities were recorded. 70,142 extraordinary checks of metering points were requested by customers and energy entities. The checks were performed for 68,093 metering points (which represents around 97% of requested checks, while a certain number of checks was performed based on last year requests). Out of the number of extraordinary checks of 60,093 metering points, irregularities were notices on 19% of them, i.e. on 68,093 metering points and irregularities were removed in 12,712 cases. These indicators are alarming. There is a high percentage of noticed irregularities per metering points. The distribution system operator still does not comply with their obligation to organize regular checks of all metering devices once a year. The control of metering devices should be improved significantly and the number of noticed irregularities confirms the necessity of their urgent replacement.

Upon registering the disappearance, restraints or damage of meters, in 94% of cases, proper metering was provided within 2 days upon registration. Average time necessary to provide proper metering since the moment of occurrence, restraints or damage of meters within the categories of high, medium and low voltage (metering points where active energy, reactive energy and maximum active power are metered) amounted to between 1.3 and 3.9 days, depending on the voltage level.

In 2023, out of total number of bills issued regularly – 40,599,290, 0.75% of them were revised. 44% of revised bills were due to improper reading. Average time necessary for complaints settlement amounted to 4 days. The reasons for bill corrections and their share in the total number of revised bills are given in Figure 3-22.

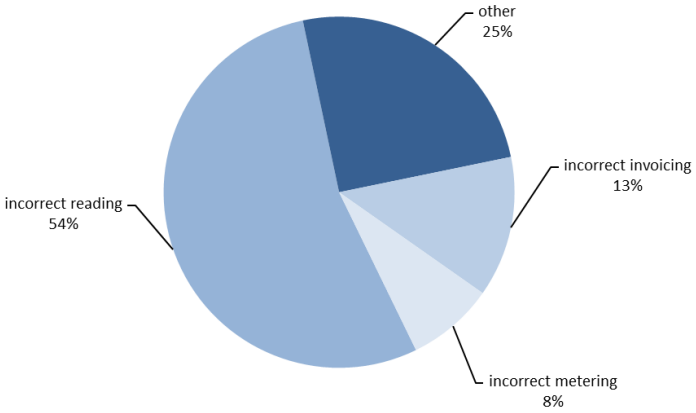

Figure 3-22: Reasons for bills corrections and their share in the total number of revised bills in 2023

3.7.3.3 Removal of technical disturbances in delivery

In 2023, there were 574 customers' requests for the removal of voltage disruptions which repeat in a longer time period. 74%, i.e. 425 requests were justified. Voltage disruptions were removed in 350, i.e. 82% of cases when the request was justified.

Average timeframe from the moment a request is filed until voltage is checked on the spot and until a customer is informed amounts to 6.77 days while the average timeframe from the moment voltage disruptions are acknowledged until they are removed amounts to 12.20 days.

3.7.3.4 Customer services

Despite the progress that has been made on the improvement in providing services to customers in customers' and contact centres (call centres), data which could serve for the assessment of the quality of services in these centres are still unavailable in most cases due to the lack of adequate information support for data monitoring and registration. In their future activities on customer services quality monitoring, all energy entities, especially suppliers licenced for the supply of final customers as well, will have to start registering, i.e. improving the registration of these data. Since 2017, the distribution system operator has been submitting the data on the work of call centres. In 2023, the total number of registered calls addressed to the call centre of the distribution system operator was 278,160 which is on the same level as last year. Out of the total number of calls addressed to the call centre, 65% (181,390 calls) were made by phone. Average time spent waiting for the operator was 7 minutes which is the same as last year. The number of phone calls addressed to services on call for failure registration amounted to 256,208.

3.8 Security of electricity supply

The reliability and efficiency of the power system in the Republic of Serbia have been increased by investments into revitalization and modernisation of production, transmission and partly distribution capacities for several years. Even without new production capacities, the security of electricity supply was considerably higher. Regular investments in the construction of new transmission and distribution capacity units will further increase the security of electricity supply in the Republic of Serbia.

3.8.1 Consumption forecast

In line with the Energy Sector Development Strategy until 2025, with projections until 2030, annual increase of less than 1% in electricity consumption is expected. Such expectations are based on GDP projections and the consumption increase in the industrial sector, as well as on the implementation of energy efficiency measures in all consumption sectors.

3.8.2 Generation adequacy/prospects

Out of the total electricity production in the Republic of Serbia, under average hydrological circumstances, around 2/3 of electricity is produced in coal-fired thermal power plants and 1/3 from hydro potential. At the end of 2018, considerable wind plants capacities started to be connected to the transmission system. Their share in the total electricity production becomes more and more considerable and it amounted to around 2.8% in 2023.

The Energy Sector Development Strategy until 2025 with projections until 2030 and the National Action Plan for Use of Renewable Energy Sources of the Republic of Serbia indicate the plan to have considerable increase in renewable energy sources. The Program for the Realisation of the Energy Sector Development Strategy of the Republic of Serbia until 2025 with projections until 2030 envisages that further realisation of the projects in the field of renewable energy sources in the period 2021-2030 will increase the contribution of renewable energy sources in the greenhouse gas emission and that it will be possible to estimate the final share of renewable energy sources in gross final consumption and projected greenhouse gas emission reduction only after the adoption of new action plans in this sector.

All thermal units in PE *EMS* are subject to the requirements of the Large Combustion Plants Directive 2001/80/EC (Large Combustion Plants Directive - LCPD) and the Industrial Emission Directive 2010/75/EU Industrial Emissions Directive - IED to the extent of limitation of the emission of polluting substances in the air – sulphur dioxide (SO_2), nitrogen oxides (NO_x) and powder substances. On October 24, 2013, the Energy Community Ministerial Council adopted decisions D/2013/05/MC-EnC and D/2013/06/MC-EnC which include rules for operation of large combustion plants which impose for PE *EPS* to reduce the emission of polluting substances into the air from existing combustion plants as of January 1, 2018 and by December 31, 2027 at the latest.

The National Emission Reduction Plan (NERP) was adopted by the Government of the Republic of Serbia in February 2020. By this plan, the Republic of Serbia was obliged to make significant moves in terms of reduction of emissions of polluting matters from large power plants. Its implementation aims at having emissions from large combustion plants harmonised with limit levels of emissions defined by the Directive on Industrial Emissions 2010/75/EU by December 31, 2027. NERP prescribes maximum allowed emissions of polluting matter (sulphur dioxide, nitrogen oxides and powder matter) from big thermal power plants on the annual level. According to NERP, it is planned to have gradual withdrawal of the oldest and the least energy-efficient thermal units until the end of 2027 due to old technology, high production costs and environment protection. In February 2019, the construction of desulphurisation plant in the Nikola Tesla A Thermal Power Plant in four units (A3, A4, A5 and A6) was initiated. Thereby, the emission of sulphur gases will be reduced nine times. In 2023, work continued on this facility, with expectations for it to be operational in 2024. Plans also include the construction of desulfurization units for the two remaining blocks at the Nikola Tesla A Thermal Power Plant (A1 and A2). Additionally, in 2023, work continued on the construction of flue gas desulfurization units for the Nikola Tesla B Thermal Power Plant, which began at the end of 2020. At the Kostolac B Thermal Power Plant, the flue gas desulfurization unit has been operational since 2022, and plans are in place to construct a desulfurization unit at the Kostolac A Thermal Power Plant as well.

In the previous years, activities were taken to reduce pollution also by the reconstruction of electric filters in all thermal power plants and thereby, the emissions of powder matter, i.e. PM (Particulate Matter) particles were considerably lower. In addition, the emission of nitrogen oxides within units A3, A4 and A5 was reduced in the Nikola Tesla A Thermal Power Plant and in the unit B1 in the Nikola Tesla B Thermal Power Plant and in Unit B2 in the Thermal Power Plant Kostolac B.

At the same time, within *EPS* JSC which is the dominant power producer in the Republic of Serbia, activities on revitalization and modernization of existing power plants are permanently realized. This will enable the increase both in terms of energy efficiency and installed capacity.

The most important activities during 2023 are the following:

- Follow-up of works on the construction of new thermal unit B3 in TPP Kostolac B with 350 MW capacity, fuelled by Kostolac lignite (PE *EPS* is the investor);
- Construction of the first wind park owned by PE *EPS* with 66 MW in Kostolac;
- Continuation of the project “green ring” which envisages planting trees around Thermal Power Plant Nikola Tesla 1 and the mining pit Radljevo which will form green ring;
- Completion of activities on revitalization and modernization of the hydro power plant Đerdap 1 – in November 2019 were continued. Since 2009, all six generators have been revitalised and after this, the hydro power plant Đerdap 1 has 180 MW higher installed capacity for the production of clean electricity and
- Activities for revitalisation of HPP Potpeć, HPP Bistrica, HPP Vlasinske and HPP Đerdap 2.

3.8.3 Use of renewable energy sources

In May 2023, the Law on Amendments and Supplements to the Law on the Use of Renewable Energy Sources ("Official Gazette of the RS No. 35/2023") came into effect. Among other changes, responsibility for setting the maximum price in auctions was transferred from the Agency to the Government of the Republic of Serbia.

In June 2023, the Ministry of Mining and Energy held the first auction for wind (400 MW) and solar (50 MW) power plants. A total of 400 MW of onshore wind capacity was awarded across four projects, with winning prices ranging from €64.48 to €79.00 per MWh. Additionally, 25.2 MW of solar photovoltaic capacity was awarded through four projects, with winning prices ranging from €88.65 to €98.80 per MWh.

A Law on Energy Efficiency and Rational Use of Energy (“Official Gazette of RS”, No. 40/21) was adopted in 2021, too. In line with new jurisdiction arising from this law, the Agency adopted a Methodology for Setting Market Premia – Highly Efficient Cogeneration (“Official Gazette of RS”, No. 106/2021) and Methodology for Setting Feed-in Tariff – Micro and Small Cogeneration (“Official Gazette of RS”, No. 106/2021) within the prescribed deadline. Both methodologies apply to power producers in highly efficient cogeneration, small cogeneration and micro-cogeneration units.

Since the adoption of the above given laws enabled the cease of validity of the Decree on Incentive Measures for Electricity Production from Renewable Energy Sources and Highly Efficient Combined Heat and Power Production (“Official Gazette of RS”, No. 56/2016, 60/2017 and 91/2018) which prescribed incentive measures for the use of renewable energy sources in line with the type of the power plant and installed capacity and purchase price for the power produced thereby (feed-in tariff), the purchase price for privileged power producers was not set in the period between 2021 and 2023. Historical review of these prices for each year is indicated in Table 3-46.

Table 3-46: Final prices for privileged electricity producers

No.	Type of power plant	Installed capacity (MW)	Incentive price (c€/kWh)				
			2016	2017	2018	2019	2020
1	Hydro power plants						
1.1		Up to 0.2	12.60	12.74	12.92	13.132	13.30
1.2		from 0.2 to 0.5	13.933 – 6.667*P	14.086 – 6.740*P	14.283 – 6.6834*P	14.512 – 6.943*P	14.701 – 7.033*P
1.3		from 0.5 to 1	10.6	10.72	10.87	11.04	11.18
1.4		from 1 to 10	10.944 – 0.344*P	11.064 – 0.348*P	11.219 – 0.353*P	11.399 – 0.359*P	11.547 – 0.364*P
1.5		from 10 to 30	7.50	7.58	7.69	7.81	7.91
1.6	With the existing infrastructure	Up to 30	6.00	6.07	6.15	6.25	6.33
2	Biomass-fired power plants						
2.1		Up to 1	13.26	13.41	13.60	13.82	14.00
2.2		From 1 MW to 10 MW	13.82 – 0.56*P	13.97 – 0.57*P	14.17 – 0.58*P	14.40 – 0.59*P	14.59 – 0.60*P
2.3		Over 10	8.22	8.31	8.43	8.56	8.67
3.	Biogas-fired power plants						
3.1		From 0 - 2	18.333 – 1.111*P	18.535 – 1.123*P	18.794 – 1.139*P	19.095 – 1.157*P	19.343 – 1.172*P
3.2		from 2 to 5	16.85 – 0.370*P	17.035 – 0.374*P	17.273 – 0.379*P	17.549 – 0.385*P	17.777 – 0.390*P
3.3		Over 5	15.00	15.165	15.377	15.62	15.82
4.	Power plants fired by landfill gas and gas from plants for treatment of public utility waste water		8.44	8.53	8.65	8.79	8.90
5.	Wind powered power plants		9.20	9.30	9.43	9.58	9.70
6.	Solar power plants						
6.1	Roof-mounted	Up to 0.03	14.60 - 80*P	14.76 – 80.88*P	14.97 – 82.01*P	15.21 – 83.32*P	15.41 – 84.40*P
6.2	Roof-mounted	From 0.03 to 0.05	12.404 – 6.809*P	12.540 – 6.884*P	12.716 – 6.980*P	12.919 – 7.092*P	13.087 – 7.184*P
6.3	Ground-mounted		9.00	9.10	9.23	9.38	9.50
6.4		from 0.2 to 2	9.00	9.10	9.23	9.38	9.50
6.5		from 2 to 10	9.00	9.10	9.23	9.38	9.50
7.	Geothermal power plants						
7.1		Up to 1	8.2	8.29	8.41	8.54	8.65
7.2		from 1 to 5	8.2	8.29	8.41	8.54	8.65
7.3		Over 5	8.2	8.29	8.41	8.54	8.65
8.	Waste fired power plants		8.57	8.66	8.78	8.92	9.04
9.	Natural gas-fired combined cycle power plants						
9.1		Up to 0.5	8.20	8.29	8.41	8.54	8.65
9.2		from 0.5 to 2	8.447 – 0,493*P	8.540 – 0.498*P	8.660 – 0.505*P	8.799 – 0.513*P	8.913 – 0.520*P
9.3		from 2 to 10	7.46	7.54	7.65	8.77	7.87

Table 3-47: Structure of prices and applied prices (VAT and duties free) of electricity withdrawn from privileged producers in 2023

Privileged producers category		Quantity	Amount	Price
		MWh	000 RSD	RSD/MWh
1	Small hydro power plants	338,827	4,315,666	12.74
2	Biogas-fired power plants	226,173	5,202,839	23.00
3	Wind-fired power plants	1,032,696	13,246,888	12.83
4	Solar power plants	9,671	261,491	27.04
4.1	Ground-mounted solar power plants	6,226	164,806	26.47
4.2	Roof-mounted solar power plants	3,445	96,686	28.07
5	Fossil fuel-fired combined heat and power plants	191,736	2,354,579	12.28
5.1	Gas-fired power plants	190,584	2,340,432	12.28
5.2	Coal-fired power plants	1,152	14,147	12.28
6	TOTAL	1,799,103	25,381,464	14.11

*Average purchase price of electricity sold by solar power plants is higher than the latest price prescribed by the Decree on Incentive Measures for Power Production from Renewable Energy Sources and Highly Efficient Combined Power and Heat Production ("Official Gazette of RS", No. 56/2016, 60/2017 and 91/2018), since most of privileged producers producing electricity in these power plants concluded contracts until 2016 when the purchase price amounted to more than 20 c€ / kWh.

In 2023, according to the Decree on Level of Separate Incentive Fee for Privileged Power Producers ("Official Gazette of RS", No. 3/2023), final electricity customers paid a separate fee for stimulating privileged electricity producers in the amount of 0.801 RSD/kWh.

Table 3-48: Incentive fee for privileged electricity producers 2019 – 2023

RSD/kWh

	2019	2020	2021	2022	2023
RES incentive fee	0.093	0.093	0.437	0.801	0.801

Table 3-49: Level of collected privileged producers' incentive fee in 2023

	Collected (000 RSD, VAT free)
Revenue from electricity sale at acknowledged price	8,086,662
Revenue based on invoiced fee	24,433,453
- *EPS Snabdevanje*	23,422,798
- Other suppliers	1,010,655
Revenues from financial securities activation	18,237
Reduction of revenue for acknowledged recovery of 2%	-650,402
Total	31,887,950

Table 3-50: Electricity withdrawn from privileged producers 2019 - 2023

MWh

Renewable energy source/ Fuel for combined production	2019	2020	2021	2022	2023
Water flow	230,298	221,283	323,941	299,815	338.827
Fossil fuels (coal, heating oil (mazoute) and natural gas) – combined production	91,501	100,062	198,349	187,756	191.736
Biogas	136,070	179,897	244,143	252,699	226.173
Solar energy	10,941	9,043	10,494	10,899	9.671
Other	892,994	835,168	1,070,731	950,210	1.032.696
TOTAL	**1,361,804**	**1,345,454**	**1,847,658**	**1,701,378**	**1.799.103**

3.8.4 Construction of new transmission capacities

In 2023, activities on regular maintenance and overhaul of existing facilities of the transmission system operator *EMS* AD were performed. On the other hand, basic investment activities in 2023 related to the construction of new facilities as well as to the reconstruction and modernization of existing facilities. In addition, investment activities included the realization of projects on connection to the transmission system.

In 2023, *EMS* AD participated in the activities related to the construction of sections 2, 3 and 4 of the first phase of the TransBalkans Corridor.

The construction of Section 1 of the first phase of TransBalkans Corridor (double-circuit) overhead line 400 kV TS Pančevo 2 – border with Romania) was completed in 2017. Since the works on the construction of the overhead line on the Romanian side are not completed, one system of the overhead line temporarily operates under 110 kV from the direction TS Pančevo 2 and it was used to provide supply for the area of south Banat ("SouthBanat knot") while the other system operates 400 kV but it is not connected to the Romanian system until the border with Romania. The construction of this overhead line represents the beginning of the project of connecting eastern and western Europe via the territory of the Republic of Serbia by 400 kV lines which will additionally increase the security of customers' supply in the Republic of Serbia.

Within the Section 2 (overhead line 400 kV TS Kragujevac 2 – TS Kraljevo 3, with an increase of the voltage level in TS Kraljevo 3 to 400 kV), works were completed in December 2021 and the overhead line was commissioned (idle running) from the direction of TS Kragujevac 2 in January 2022. Works on the upgrade and reconstruction of TS 400/220/110 kV Kraljevo 3 were completed and this transformer station started its trial operation in June 2022.

For the Section 3 (overhead line 2x400 kV TS Obrenovac – TS Bajina Bašta, with an increase of the voltage level in TS Bajina Bašta to 400 kV), in 2023, the application was approved for additional investment grant within the 7th round of WBIF invitation.

Within the Section 4 (Interconnector overhead line 2x400 kV between Serbia, BiH and Montenegro), in 2023, the activities on the collection of funds for further works continued.

In addition to the works on the construction of TransBalkans Corridor as a project of national and strategic interest, in 2023, *EMS* JSC also worked on the construction of another important capital project – project BeoGrid2025 which includes the construction of TS Beograd 50 with accompanying overhead lines of 400 kV and 110 kV voltage level as well as on the construction of the overhead line OHL 2x400 kV TS Belgrade 50 – connection switching station Čibuk 1. By the Government Decision of December 25, 2023, a programme for the allocation of funds of subsidies to EMS JSC for the realisation of this project was adopted.

In 2023, works on the project Increase in Transmission Capacity of Bor Region were also continued. The Government of the Republic of Serbia adopted a decision that this is a project of particular interest for the Republic of Serbia. This project includes the construction of TS 400/110 kV Bor 6 and the construction of 400 kV overhead line.

The most significant investment works in high-voltage facilities (transformer stations and substations) during 2023 included: the start of reconstruction at TS 400/110 kV Kragujevac 2, TS 400/110 kV Bor 2, TS 400/110 kV Vranje 4, TS 400/220 kV Obrenovac, TS 220/110 kV Valjevo 3, and RP 110 kV Đerdap 2, as well as the completion of reconstruction at TS 400/110 kV Pančevo 2, TS 400/110 kV Bor 2, TS 400/220/110 kV Niš 2, TS 400/220/110 kV Kraljevo 3, TS 220/110 kV Belgrade 3, TS 400/110 kV Srbobran, RP 400 kV Đerdap 1, TS 220/110 kV Zrenjanin, and TS 400/110 kV Obrenovac.

In 2023, the most significant investment works on transmission lines were: the completion of works on KB 110 kV TS Belgrade 1 – TS Belgrade 6, DW 110 kV No. 123/2 TS Aranđelovac – TS Topola, DW 110 kV No. 1144B TS Kostolac A – Smederevo 3, DW 110 kV No. 104/X TS Belgrade 5 – TS Inđija 2, and DW 110 kV No. 134/2 HE Kokin Brod – TS Zlatibor. In addition to these five projects completed in 2023, intensive work was carried out on another six transmission lines.

During 2023, EMS AD issued numerous documents for connecting to the transmission system, with the most significant connections being for distribution transformer stations. The connected facilities included the reconstructed TS 110/10 kV Kragujevac 5, the reconstructed TS 110/35 kV Petrovac, the reconstructed TS 110/35 kV Šabac 1, and the new TS 110/35 kV Užice 2, TS 110/20 kV Aranđelovac 2, and TS 110/35/10 kV Požarevac 2.

The Law prescribes that the transmission system operator is obliged to adopt a transmission system development plan once in two years for the following 10-year period and to adopt a plan on investments into the transmission system for the following three-year period. The Agency approves these plans. The transmission system development plan is based on the amended version of the former one, bearing in mind the experience in transmission network operation and maintenance. The plan is being harmonised with the plans of neighbouring distribution system operators and plans of transmission system operators. Since the transmission System Operator of the Republic of Serbia belongs to the a synchronised area of "Continental Europe", their active participation in the preparation of a PanEuropean Ten Years Network Development Plan which is drafted within the ENTSO-E association.

During 2023, EMS AD submitted a draft of the Transmission System Development Plan for the Republic of Serbia for the period 2023-2032 to the Agency. In accordance with the law, the Agency put the plan out for public consultation from July 4 to August 5, 2023. By the end of 2023, the Agency had not approved the plan because it had not been revised according to the Agency's requirements.

Additionally, EMS AD submitted a draft of the Investment Plan for the Transmission System of the Republic of Serbia for the period 2023-2025 in 2023. The Agency had not approved this plan by the end of 2023 as it had not been revised according to the Agency's requirements.

3.8.5 Distribution system operator's investment activities

In 2023, activities on regular maintenance and overhaul of existing facilities of the distribution system operator *Elektrodistribucija Srbije* were performed. On the other hand, main investment activities in 2023 were related to the construction of new facilities as well as to the reconstruction and modernization of existing facilities. In addition to the above mentioned, investment activities also included the realization of projects on connections to the distribution system.

Within the distribution system, the following works were ongoing in 2023:

- On transformer stations:

  Work continued on the construction and reconstruction of transformer stations. New transformer stations completed include: TS 110/35 kV Užice 2, TS 110/35/10 kV Požarevac 2, TS 35/10 kV Velika Župa, and TS 35/10 kV Lazarevac 4. The following transformer stations were reconstructed: TS 110/35 kV Petrovac and TS 110/10 kV Kragujevac 5 (Divlje Polje).
- on distribution lines:

  Construction and reconstruction of a set of distribution lines within the distribution medium voltage network;

  Construction of low voltage network, in line with the local growth in electricity consumption and transmission capacities development as well as with the need to upgrade quality of supply;
- metering and management:

  Upgrade of metering devices and further development of remote reading system was performed but not to the planned scale.

The Law prescribes that the distribution system operator is obliged to adopt the distribution system development plan once in two years for the following 10-year period and to adopt a plan on investments into the distribution system for the following three-year period. The Agency approves these plans. The distribution system development plan is based on the amended version of the former one, bearing in mind the experience in distribution network operation and maintenance. The plan is being harmonised with the transmission system development plan.

In 2023, Elektrodistibucija Srbije submitted to the Agency a draft of the Distribution System Development Plan for the Republic of Serbia for the period 2023-2032. By the end of 2023, the Agency had not approved this plan as it needed to be aligned with the Investment Plan for the Distribution System for the period 2023-2025, which Elektrodistibucija Srbije had not submitted to the Agency for approval during 2023.

The Law prescribes that, in addition to the Distribution System Development Plan and Distribution System Investment Plan, the DSO is obliged to adopt and submit the plan of transfer of metering devices, metering and switching boards, installation and equipment in metering and switching boards, connection lines and other devices which are within the connection of customers' facilities, i.e. producers' facilities to the Agency for approval. The DSO complied with this obligation and on September 13, 2021, the DSO submitted the Plan for Transfer of Metering Devices for 2021-2024 to the Agency. On September 24, 2021, the Agency approved this plan.

3.8.6 Reduction of losses within the distribution network

In 2023, there was a decrease in losses in the distribution network which decreased by 0.38% in comparison to 2022 losses and they amount to 10.85% of electricity withdrawn into the distribution system. The activities on the reduction of losses have to be intensified in the future since it is necessary to bring losses to technically acceptable level. Regular activities on the metering devices checks and on the transfer of metering devices and connection lines have to be performed in line with legal obligations and adopted plans. In 2023, checks were made only on 3.3% of planned metering devices.

In the future, it is necessary to implement measures which should contribute to loss reduction and which are also envisaged by the DSO loss reduction plan and which include:

- construction of new network facilities, overhead lines and transformer stations;
- transfer of metering devices, switchboards, connection lines, installation and equipment in the switchboard and other devices within the connection in the facilities of existing customers and their operation in line with technical regulations and distribution system code;
- procurement and installation of new meters with most of customers;
- modernisation of the remote measuring system and consumption management;
- improvement of technical and business system for calculation and collection of electricity bills;
- activating existing devices and construction of new ones for reactive power compensation and
- improvement of cooperation with state bodies as regards electricity theft prevention.

3.8.7 Smart metering systems

The Law prescribes that the transmission system operator and the distribution system operator draft a plan for the implementation of economically justified types of advanced metering systems and they submit it to the Agency for the purpose of issuance of an opinion.

Since the transmission system operator has smart meters installed on all delivery points, they did not draft this plan and submit it to the Agency.

Table 3-51 indicates the total number of meters owned by the transmission system operator in 2023. All meters are smart with following functionalities: remote reading by the TSO, remote reading by a user via adequate application, two-direction metering (production and consumption), tariff management and data preservation.

Table 3-51: Smart meters within the transmission system in 2023

Voltage level	400kV	220kV	110kV
Number of meters installed at customers' facilities	0	6	96
Number of meters installed at producers' facilities	11	11	42
Number of meters installed at the TSO and closed DS	0	0	457
Number of meters installed on interconnectors	8	5	13
Total	**19**	**22**	**608**

In 2023, the distribution system operator did not submit the plan for the implementation of economically justified types of advanced metering systems to the Agency.

Table 3-52 indicates the total number of meters owned by the distribution system operator. The total percentage of smart meters installed at customers' facilities amounts to 5.24% (for all voltage levels), while the total percentage of smart meters installed at producers' facilities amounts to 97.69% (for all voltage levels).

Table 3-52: Smart meters within the distribution system in 2023

	Voltage level	35, 20, 10kV	0.4kV		Households	Public lighting	Total
			Customers whose capacity is metered	Customers whose capacity is not metered			
Meters installed at electricity customers' facilities	Electromechanical	40	460	204,585	2,245,909	15,478	2,466,472
	Digital	5,587	42,582	159,880	1,120,401	8,620	1,337,070
	Total	5,627	43,042	364,465	3,366,310	24,098	3,803,542
	Smart meters	5,523	24,958	28,005	138,728	1,905	199,119
	Percentage of digital meters in comparison to the total number	98.15%	57.99%	7.68%	4.12%	7.91%	5.24%
Meters installed at electricity producers' facilities	**Voltage level**	**35kV**	**20kV**	**10kV**	**0.4kV**		
	Electromechanical	0	0	3	0		3
	Digital	38	51	119	178		386
	Total	38	51	122	178		389
	Smart meters	38	51	119	172		375
	Percentage of digital meters in comparison to the total number	100.00%	100.00%	97.54%	96.63%		97.69%

In case of customers' facilities, most smart meters can only provide remote reading by the DSO and such meters account for 2.8% of the total number of meters installed at customers' facilities. 1.44% include all the three functionalities, while only 0.58% of meters include seven functionalities (remote reading by the DSO, remote reading by a customer (buyer), remote turn on/off, remote consumption control, tariff management, house display and data preservation).

In case of producers, the greatest number of smart meters include three functionalities and such meters account for 45.5% out of the total number of all meters installed at producers' facilities. 33.42% of the total number of all installed meters for producers include only remote reading by the DSO. 1.54% of meters include only remote reading by customers (producers)

while 17.22% of meters includes five functionalities (remote reading by the DSO, remote reading by a customer (producer), remote turn on/off, two-direction metering and data preservation).

It is essential that the distribution system operator complies with the given legal obligation in the future and to adopt the plan for the implementation of economically justified types of advanced metering systems. Advanced metering systems and advanced networks will enable higher reliability and quality of electricity delivery. They will also stimulate better consumption management and more dynamic market and thereby reduce technical and commercial electricity losses to a great extent.

4. NATURAL GAS

4.1 Sector structure and capacities

4.1.1 Organisational and ownership structure

Gas sector organisational structure at the end of 2023 is given in Figure 4-1. *Naftna industrija Srbije* (Petroleum Industry of Serbia) JSC, Novi Sad (hereafter NIS JSC) is the only natural gas producer. Natural gas production is not a regulated activity.

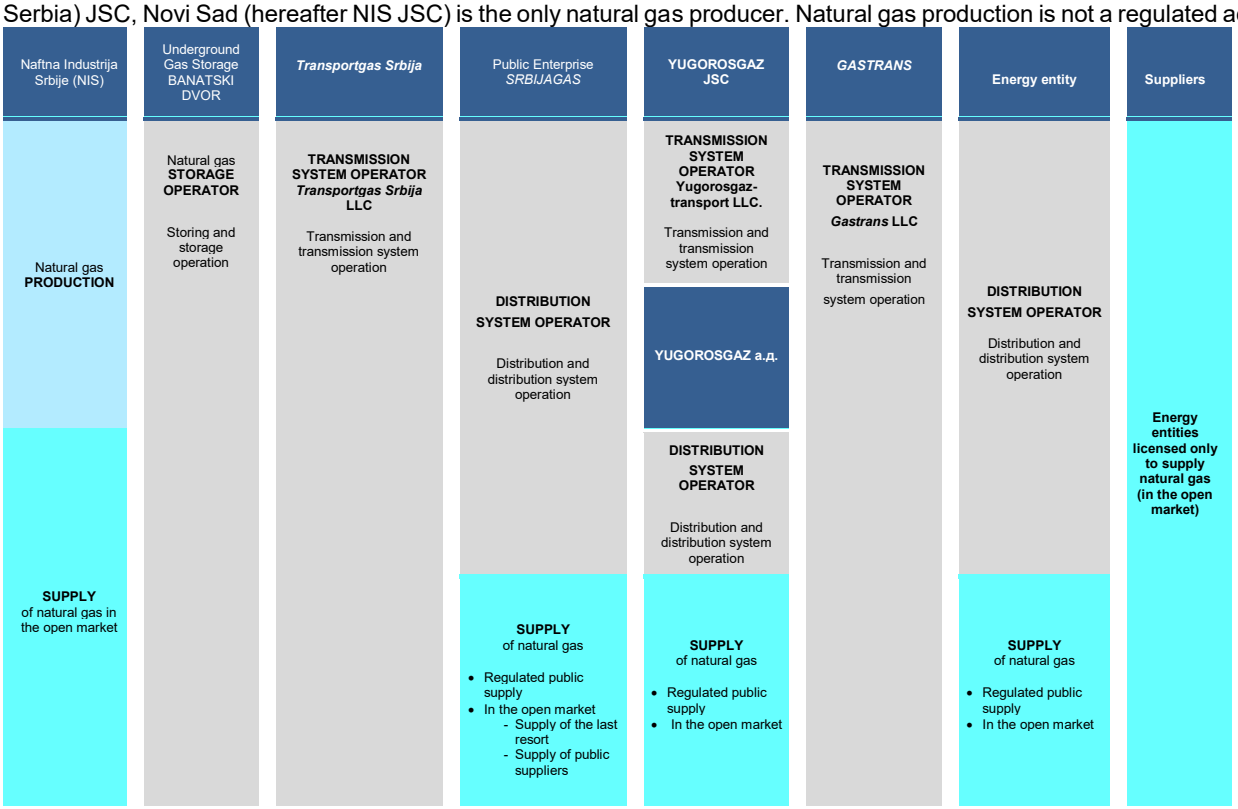

Figure 4-1: Organisational structure of the natural gas sector at the end of 2023

In Serbia, natural gas transmission and transmission system operation are performed by three transmission system operators (TSO): *Transportgas Srbija* LLC, Yugorosgaz-Transport LLC, Niš and *Gastrans* LLC, Novi Sad. In 2015, TSO Yugorosgaz-Transport LLC completed legal unbundling from a vertically integrated company „Yugorosgaz" JSC Belgrade. The functional unbundling asked for prior amendment of the interstate treaty. In PE *Srbijagas*, decisions on legal and functional unbundling of TSO – *Transportgas Srbija* LLC from the parent company were adopted. Since 2021, *Transportgas Srbija* LLC has been performing natural gas transmission and transmission system operation.

On June 9, 2021, the single member of the company - PE *Srbijagas* was deleted from the Serbian Business Registers Agency. Instead, the Republic of Serbia was registered as the only member of the company "*Transportgas Srbija*" LLC with 100% of shares. In October 2021, the Government approved the Decision on Amendments to the Decision on Foundation of Company "*Transportgas Srbija*" LLC which created conditions for *Transportgas Srbija* LLC to operate independently from PE *Srbijagas* which continued operating in the field of natural gas supply and natural gas public supply.

On December 21, 2023, the Republic Commission for Energy Networks, which was established in October 2023 pursuant to the Law on Amendments to the Energy Law ("Official Gazette of RS", No. 62/23), made a decision to approve the amendments to the Decision on the establishment of the limited liability company "Transportgas Serbia" LLC. This decision was made as the commission was granted the authority by this law to oversee the operator of the natural gas transmission system, whose founder is the Republic of Serbia, in accordance with this law.

Within the exemption procedure, the Agency approved the exemption from ownership unbundling, third party access and regulated prices for 20 years period to *Gastrans* LLC company. In 2019 and 2020, *Gastrans* LLC constructed gas interconnector (Zajecar – Horgos) in order to initiate natural gas transmission in 2021. Following the connection to the transmission system of Hungary, this gas interconnector became fully operational starting from October 1, 2021 when natural gas started being transmitted from Bulgaria direction in order to cover the demand in the Republic of Serbia and in order to enable natural gas transit from the border with Bulgaria up to the border with Hungary.

Distribution and distribution system operation are performed by 31 distribution system operators (DSOs) as it was the case last year. In addition to PE *Srbijagas*, and *Yugorosgaz* JSC, natural gas distribution and distribution system operation are performed by other 29 companies among which most of them are owned by municipalities and towns, some of them are with miscellaneous ownership and some of them are private. One energy entity holding a valid licence does not perform this

activity. All DSOs, except for DSO – PE *Srbijagas*, in addition to performing natural gas distribution, within the same legal person, they can also perform natural gas supply at regulated prices and supply in the open market since they have less than 100,000 connected final customers which is why they are not obliged to execute legal unbundling between distribution and supply.

At the end of 2023, there were 62 energy entities holding licence for natural gas supply in total and 24 of them were active. Natural gas public supply of final customers at regulated prices was performed by 31 public suppliers which also perform natural gas distribution. In 2023, 5 suppliers were awarded with the licence for wholesale natural gas supply but these suppliers were not active during 2023.

In line with the law, the Government of the Republic of Serbia appointed PE *Srbijagas* to be the supplier of public suppliers and the natural gas supplier of the last resort for 2023 as well.

Storage operator performs natural gas storage and storage operation. There is only one storage, Natural Gas Underground Storage Banatski Dvor, LLC, founded and owned by PE *Srbijagas* (49%) and Gazprom Germania (51%). This was defined on the basis of the Agreement of the Republic of Serbia and the Government of the Russian Federation on Cooperation in Oil and Gas Industry concluded in January 2008 (Law on Confirmation of the Agreement of the Republic of Serbia and the Government of the Russian Federation on Cooperation in Oil and Gas Industry "Official Gazette of RS – International Agreements, No. 83/08).

4.1.2 Production, transmission, distribution and storage capacities

4.1.2.1 Production

Natural gas production in Serbia is realized in Vojvodina area and the only natural gas producer is NIS. After preparation process which makes produced gas applicable to final customers, produced gas is delivered to 9 points into the transmission system while much smaller quantities (around 2.6% of produced volume) are delivered to 4 points into the distribution system. The total annual production which was delivered to the transmission and distribution system in 2023 amounted to 2,043 GWh which is 1.3% less than last year production volume. After significant growth in 2011 and 2012, natural gas production has been decreasing year after year since 2013 while the decrease in natural gas production in Serbia during 2023 was considerably smaller than in previous years.

Table 4-1: Natural gas production in Serbia in period 2014 – 2023 in GWh

Production/Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Delivered to transmission system	4,648	4,330	3,981	3,755	3,355	2,913	2,627	2,226	2,016	1,989
Delivered to distribution system	144	103	113	72	82	92	92	92	54	54
Total production (million m^3)	4,792	4,433	4,094	3,827	3,437	3,005	2,719	2,318	2,070	2,043
Variation in comparison to (n-1) year	-0.2	-7.5	-7.6	-6.5	-10.2	-12.5	-9.6	- 14.7	-12.0	-1.3

Out of the total volume delivered into the transmission and distribution system in 2023, 50 GWh (2.4%) of natural gas was sold to other suppliers, while the remaining quantity of natural gas was spent by NIS to cover its own demand, mostly in Pančevo oil refinery. So as to cover their own natural gas demand of 3,162 GWh, NIS purchased 1,168 GWh of natural gas from PE *Srbijagas* in 2023.

4.1.2.2 Transmission

At the end of 2023, the length of the transmission system where *Transportgas Srbija* LLC performs the activity amounted to 2,604 km in north and central Serbia, while the length of the Yugorosgaz transport LLC transmission system amounted to 125 km in southeast Serbia. *Gastrans* LLC performs the transmission activity within 402 km of gas pipeline from the border with Bulgaria up to the border with Hungary as of January 1, 2021. If one considers the length of transmission gas pipelines in km as the criterion, *Transportgas Srbija* LLC operates 83.2% of the transmission gas pipeline network in Serbia, *Gastrans* LLC 12.8% and Yugorosgaz-transport LLC remaining 4.0%. The total length of transmission gas pipelines in Serbia is indicated in Table 4-2).

In December 2023, the new Dimitrovgrad - Niš gas pipeline, with a length of 109 km and a diameter of DN 700, was connected to the transmission system of the Bulgarian transmission system operator at Kalotina on one side and to the transmission system of Yugorosgaz-Transport LLC at Trupale near Niš on the other side. The Dimitrovgrad - Niš pipeline is bidirectional. The construction of this pipeline enhances the security of natural gas supply and allows for the diversification of natural gas supply sources.

Table 4-2: Length of the transmission gas pipelines in Serbia in 2013 - 2022

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Network length, km	2,423	2,423	2,423	2,459	2,464	2,464	2,539	3,005	3,028	3,131

Over 70% of population in Serbia live in areas with constructed transmission gas pipelines which represent the precondition for further gas system development, i.e. for the construction of distribution gas pipelines and natural gas consumption growth.

Table 4-3: Important technical characteristics of the transmission system

Main technical characteristics of the transmission system	*Gastrans* LLC	*Transportgas Srbija* LLC	Yugorosgaz-transport LLC
Capacity (GWh/day)	≈ 355	≈ 245	≈ 23
Pressure (bar)	66-75	16 - 75	16 - 55
Length (km)	402	2,604	125
Diameter	DN 1200	DN 150 - DN 750	DN 168 - DN 530
Compressor station, power (MW)	19,287	4.4	-
Number of entries into the transmission system	1	15	2
From another transmission system	1	5	2
From production fields – local gas	0	9	-
From the storage	0	1	
Number of exits from the transmission system	4	251	7
Metering and regulating stations on transmission system exit	0	246	6
Overtaking stations	4	2	1
Entry into Yugorosgaz transmission system	0	1	-
Interconnector towards BiH	0	3	-
Exit into Transportgas Srbija transmission system	3	0	1
Interconnector towards Hungary	1	0	0
Natural gas storage	0	1	0

Table 4-3 indicates the most important technical characteristics of the transmission systems managed by *Transportgas Srbija* LLC, *Gastrans* LLC and Yugorosgaz transport LLC.

Transmission system operators are obliged to provide automatic collection and processing of the data on natural gas flows with collection interval of 24 hours or shorter for all delivery points from the transmission system. Such metering and data acquisition equipment is necessary for market functioning and development and it has been installed in all exits on the system which is operated by *Yugorosgas-transport* LLC and by *Gastrans* LLC and *Transportgas Srbija* LLC and on 89% of the total number of exits from the PE *Srbijagas* transmission system. The quantity of natural gas delivered from the exits of the transmission system with daily measurements by Transportgas Serbia d.o.o., where automatic data collection on natural gas flows is ensured, is 99.78% of the total delivered quantity of natural gas. For exits of the transmission system where automatic data collection on natural gas flows is not provided, the reason is of a technical nature, most commonly due to a lack of electricity on that exit.

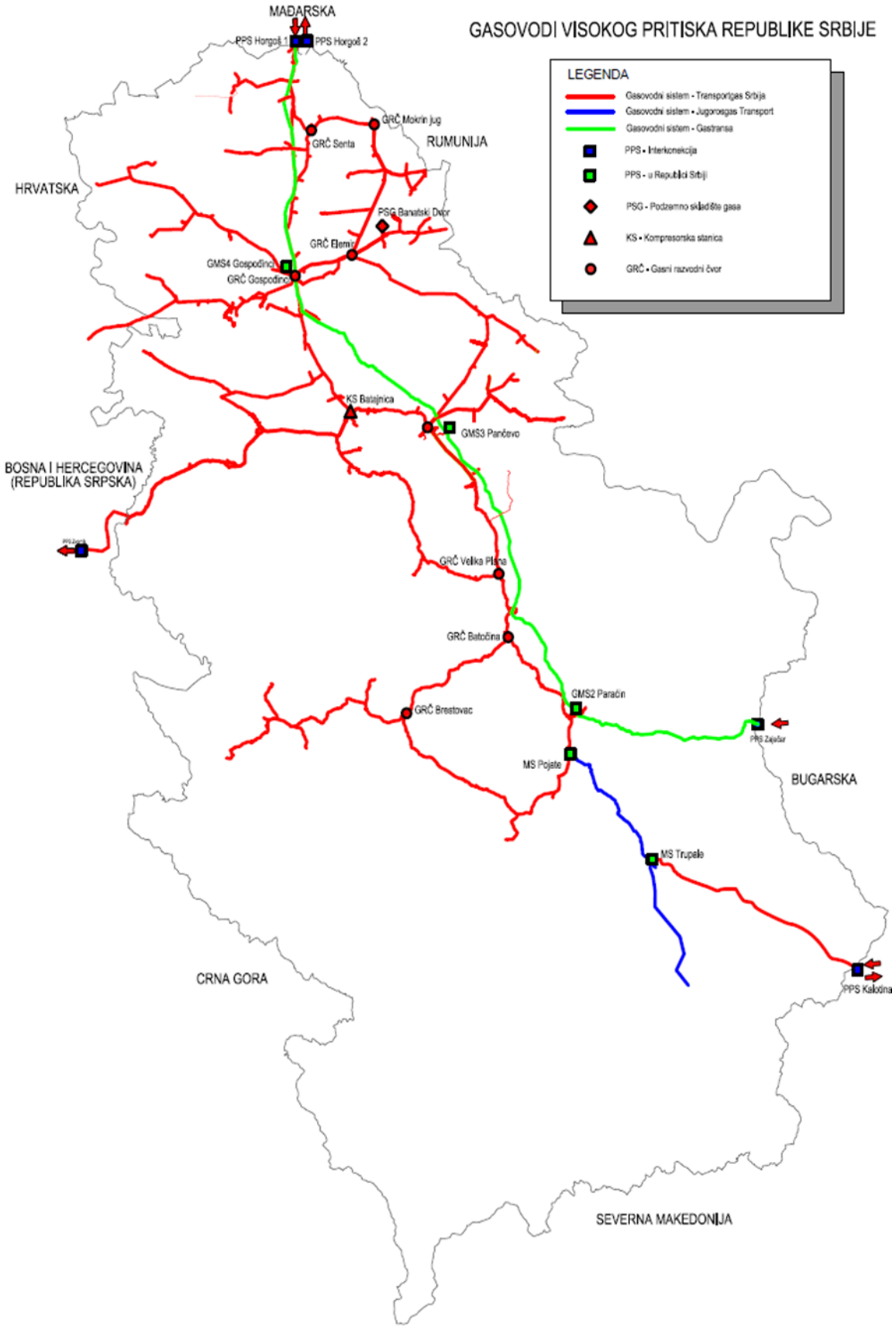

Figure 4-2: Natural gas transmission system of the Republic of Serbia

4.1.2.3 Distribution

In the beginning of 2023, 31 distribution system operators performed natural gas distribution and distribution system operation. There is one more licenced distribution system operator but it has not started performing the activity yet. The length of the distribution network in Serbia has increased from 2019 till the end of 2023 by 22.57%, i.e. to 23,639 km (without connections) thus creating the conditions for the connection of new customers. In comparison to 2022, the network was extended by 1,467km which amounts to 6.62% increase. The highest percentage increase in network length in 2023 was achieved by ODS Srem Gas, amounting to 11.65%, followed by Srbijagas, which operates 62.59% of the total distribution network in Serbia, with an increase of 8.97%. The third highest increase in distribution network length was recorded by ODS Yugorosgaz, at 4.08%. For 17 ODSs, the length of the distribution network remained unchanged compared to 2022.

Table 4-4: Length of the distribution network in Serbia in 2019 - 2023

	2019	2020	2021	2022	2023
Length of the distribution network	19,286	19,883	20,831	22,172	23,639

The number of active connections (delivery points) within distribution networks amounts to 324,925. In comparison to the previous year, it has been increased by 18,110 connections (i.e. by 5.90%).

Table 4-5: Length of distribution network and number of delivery points at the end of 2023

No.	Natural gas distributor	Distribution grid length, m	Number of active connections
1	7. Oktobar, Novi Kneževac	55,200	1,644
2	Beogas, Belgrade	525,428	14,097
3	Beogradske elektrane, Novi Beograd	336,790	5,268
4	Boss construction, Trstenik	9,733	87
5	Čoka, Čoka	27,195	838
6	Drugi oktobar, Vršac	200,843	13,454
7	Elgas, Senta	67,190	2,207
8	Gas – Feromont, Stara Pazova	507,810	18,024
9	Gas – Ruma, Ruma	580,091	9,589
10	Gas, Bečej	198,197	2,487
11	Gas, Temerin	266,500	7,508
12	Graditelj, Srbobran	150,200	2,664
13	Ingas, Inđija	374,174	11,733
14	Interklima, Vrnjačka Banja	109,075	1,446
15	Komunalac, Novi Bečej	121,158	2,665
16	Kovin – Gas, Kovin	333,694	4,706
17	Loznica - Gas, Loznica	191,900	3,442
18	Novi Sad – Gas,Novi Sad	2,456,891	52,310
19	Polet, Plandište	239,300	3,580
20	Resava Gas, Svilajnac	67,316	629
21	Cyrus energy, Belgrade	22,078	2,147
22	Sigas, Požega	67,848	570
23	Sombor – Gas, Sombor	182,000	3,194
24	*Srbijagas*, Novi Sad	14,794,378	144,173
25	Srem - Gas, Sremska Mitrovica	332,021	7,110
26	Standard, Ada	43,280	1,288
27	Suboticagas, Subotica	454,294	14,017
28	Toplana – Šabac, Šabac	170,381	3,676
29	Užice – gas, Užice	204,519	3,349
30	Vrbas – Gas, Vrbas	189,158	2,334
31	Yugorosgaz, Beograd	360,111	2,604
	TOTAL	23,638,753	342,840

Plan for the transfer of metering devices, i.e. metering and regulation stations

The 2014 Energy Law (“Official Gazette of RS”, No. 145/14) Article 261, item 9) prescribed the obligation of a DSO to adopt a plan for transfer of metering devices, i.e. metering and regulation stations (MU/MRS) in the facilities of current customers, i.e. producers and to report to the Ministry of Mining and Energy and the Agency twice a year on planned and taken activities on the realisation of the transfer plan. The goal is to transfer (take over) all MD/MRS until December 31, 2020.

At the moment of the entry into force of the Law, out of 33 DSOs, all MD/MRS in 17 of them are owned by the operator. In the remaining 16 DSOs, around 48% of MU/MRS (around 92,000 out of 195,000) were not owned by DSOs. One DSO was under bankruptcy and it did not perform DSO activity, and therefore, 15 of them submitted their transfer plans which were approved by the Agency.

Following the expiry of the legal deadline, out of the planned 92,641 MD/MRS, 54,839 of them or 59.20% of them were transferred. Only 3 DSOs complied with their legal obligation and took over all planned devices, i.e. Sombor-Gas, Sombor, PE “Ingas” Indjija and “Loznica-Gas” LLC Loznica.

The Law on Amendments to the Energy Law (“Official Gazette of RS”, No. 40/21) which was adopted in 2021 prescribes that the natural gas distribution system operators should take over all metering devices, i.e. metring-regulation stations until December 31, 2024 at the latest (Article 152 of the Law) and that they are obliged to report to the Agency on the realisation of plans until the prescribed deadline.

In accordance with the provisions of the Law, the takeover plans (which include the annual dynamics of meter device takeovers through 2024) to which the Agency has granted approval were submitted by eight ODSs: (JCP "Čoka" Čoka, JP "Gas Ruma" Ruma, DOO "Gas" Bečej, JP "Gas" Temerin, JKP "Graditelj" Srbodran, JP "Ingas" Inđija, JP "Kovin Gas" Kovin, and JP "Polet" Plandište). Meanwhile, "Novi Sad-Gas" informed the Agency that it has taken over all devices in its system. The remaining five ODSs that have not fulfilled this legal obligation ("Gas-Feromont" AD Stara Pazova, JP "Srbija Gas" Novi Sad, JP "Srem Gas" Sremska Mitrovica, "Komunalac" Novi Bečej, and JP "Vrbas-Gas" Vrbas) submitted an overview of the total number and the status of the takeover of MD/MRS up to the end of 2023.

4.1.2.4 Storage

Underground gas storage Banatski Dvor is very important for the security of natural gas supply. It is located on the depleted gas deposit with total volume of 3.3 billion m3 of natural gas. Total area of the storage amounts to around 54 km^2. The operational volume of the storage amounts to 4,617 GWh of natural gas while the maximum storage withdrawal capacity amounts to 51.3 GWh/day.

Banatski Dvor storage was commissioned in November 2011. Bidirectional gas pipeline Gospođinci – Banatski Dvor enables unhindered and full connection of the underground gas storage with the transmission system of *Transportgas Srbija*. The basic data on this gas pipeline are the following:

- length 42.5 km
- nominal diameter DN 500
- maximum working pressure: pmax=75 bar
- maximum gas flow:
  - withdrawal from UGS B. Dvor Q=102.6 GWh/day and
  - injection into UGS B.Dvor Q=51.3 GWh/day).

After the second development phase, the operational storage volume will be increased to 8,208 GWh of natural gas. The underground storage is connected by two gas pipelines to the gas pipeline junction point in Elemir.

In 2023, maximum technical capacity of injection was 27,702 GWh/day and maximum withdrawal capacity (from the storage) was 51,300 GWh/day. Maximum daily injection quantities in 2023 amounted to 25,423 GWh/day and maximum daily withdrawn quantities recorded 45,401 GWh/day.

In 2023, the cushion gas quantity in the storage did not change and it amounted to 5,432 GWh.

In 2023, less natural gas was withdrawn from the storage than injected into it. In the beginning of 2023, there were 5,971 GWh of commercial gas. 2,476 GWh of gas was injected from the transmission system into the storage, out of which 38 GWh were spent to cover the storage demand. The remaining 2,438 GWh of commercial gas were injected for commercial purposes. Users withdrew from the storage 980 GWh from the storage, and this is also the volume injected into the transmission system. At the end of 2023, 7,428 GWh of commercial gas were stored in the storage.

4.2 Natural gas consumption and supply sources

In 2023, 29,812 GWh of natural gas were available from: import, local production and underground storage. 2 million m^3 in total were available for consumption and 27,437 GWh of natural gas were consumed.

Most of natural gas quantities are provided through import from the Russian Federation based on the long-term contract. The company Yugorosgas JSC (shareholders: Gazprom 50%, PE *Srbijagas* 25% and Central ME Energy and Gas, Vienna 25%) procures natural gas from Gazprom for customers in Serbia.

In 2023, natural gas import from the Russian Federation in line with a long-term contract amounted to 26,102 GWh and it was realised from the direction from Bulgaria via the transmission system of Gastrans LLC. In 2023, except for import in line with long-term contracts and other contracts for the natural gas import from the Russian Federation, PE *Srbijagas* purchased natural gas from another three suppliers and that volume was stored in the natural gas storage in Hungary for the supply purposes in Serbia and withdrawn from the Hungarian transmission system.

In 2023, local production of 2,043 GWh could meet only 7.4% of the demand which represents approximately the same level as last year when it amounted to 7.3% of the demand could be met. Gas was not exported in 2023.

Table 4-6: Natural gas supply sources and consumption in 2022 and 2023

	2022 GWh	2023 GWh	2023/2022 Index
Local production	**2,070**	**2,043**	**98.7**
Import from the Russian Federation – via long-term contract	23,786	26,102	109.7
Import from other sources – via other contracts	8,041	1,584	19.7
Total import	**31,827**	**27,686**	**86.9**
Quantities withdrawn from the underground storage	2,262	83	3.7
TOTAL AVAILABLE QUANTITIES	**36,159**	**29,812**	**82.4**
Injected into the storage	7,559	1,922	25.42
Gross consumption	28,600	27,890	97.5
Difference between quantities purchased and sold from transmission system operators for losses, balancing and self-consumption	143	197	137.7
Distribution network losses and demand within the legal person	249	256	102.8
Export	**0**	**0**	**0**
For final consumption	**28,208**	**27,437**	**97.3**

The number of delivery points in 2023 increased by 17,913 in comparison to 2022. At the end of 2023, it amounted to 342,904. There were 64 of them on the transmission system and 342,840 delivery points on the distribution system. Out of the number, households accounted for 326,503 or 95%.

Table 4-7: Number of delivery points at the end of 2022 and 2023

Consumption category	2022	2023	Variation 2023-2022
Households	309,176	326,503	17,327
District heating companies	162	173	11
Industry and other	15,653	16,228	575
Total	**324,991**	**342,904**	**17,913**

In 2023, 27,437 GWh of natural gas was consumed. It amounts to 3% less than in 2022. Consumption in households decreased by 1%. In district heating companies, it decreased by 3% due to mild winter, while in industry, it decreased by 3% in comparison to last year.

Consumption structure for different categories is given in Table 4-8.

Table 4-8: Consumption structure in 2022 and 2023

Consumption category	2022 GWh	2023 GWh	2023/2022 Index
Households	3,876	3,825	98.7
District heating companies	5,530	5,369	97.1
Industry and other	18,797	18,244	97.1
Total	**28,203**	**27,437**	**97.3**

Households consumption accounts for 14% of final natural gas consumption in 2023. District heating companies consumption accounted for 20%, while industry and other customers covered 66% (this consumption includes the quantities purchased in the market and the quantities NIS spent from its local production).

The structure of the final natural gas consumption in 2023 is given in Figure 4-3.

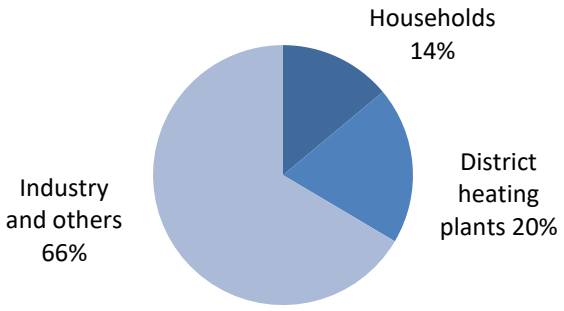

Figure 4-3: Structure of natural gas consumption in Serbia in 2023

Average annual natural gas consumption per connected household amounted to 11,714 kWh in 2023 (including active delivery points for households which did not consume gas during 2023) which amounts to 6.5% less than in 2022. If one only takes into account the households which consumed natural gas during 2023 (there were 307,540 of them), average annual consumption per household amounted to 12,436 kWh.

4.3 Regulation of the transmission system operator

Transportgas Srbija LLC is a company which, at the end of 2019 and during 2020 to a great extent, started taking over the activities on natural gas transmission. Since October 2020, the company fully took over natural gas transmission and transmission system operation.

In June 2021, shares of PE *Srbijagas* in the daughter company *Transportgas Srbija* LLC were transferred to the Republic of Serbia which became the only member of *Transportgas Srbija* LLC with 100% of shares. In line with the change of ownership, in October 2021, the Government amended the Foundation Act of *Transportgas Srbija* LLC in such a manner that the transmission system operator *Transportgas Srbija* continued performing natural gas transmission and transmission system operation while it ceased to be a part of a vertically integrated company PE *Srbijagas*. In such a manner, legal bases for non-discriminatory operation of the system operator *Transportgas Srbija* LLC and independent operation from all other market participants performing natural gas supply and public supply were created.

In 2013, "Yugorosgaz-transport" LLC is the transmission system operation which completed legal unbundling from its founder - the vertically integrated company "Yugorosgaz" JSC and obtained the licence for transmission and transmission system operation in line with the law regulating the energy sector at that time. Following the adoption of the 2014 Energy Law, Yugorosgaz-transport LLC was obliged to secure functional unbundling from the vertically integrated company Yugorosgaz JSC as a part of it.

Gastrans LLC is the transmission system operator which started its commercial operation on January 1, 2021 and all gas pipeline capacities were in function as of October 1, 2021 when cross-border natural gas transmission to Hungary was initiated.

The transmission system operator *Transportgas Srbija* LLC did not submit the Transmission Network Code to the Agency for approval in 2023. *Transportgas Srbija* LLC regulated their relations with system users via commercial contracts and partly by PE *Srbijagas* Code, which was adopted and published in the Official Gazette of RS in August 2013.

"*Yugorosgaz*" JSC submitted a draft of the Natural Gas Transmission Network Code in December 2014. The Agency approved the Code in January 2015 and the Code is in force. The Code should be harmonised with the Law and the Code of *Transportgas Srbija* LLC once it is adopted.

The transmission system operator "*Gastrans*" LLC submitted the Transmission Network Code which regulates the conditions for the access to available transmission capacity and conditions for the use of gas transmission service. The Council of the Agency approved the Code on the session held on May 15, 2020.

4.3.1 Unbundling of the Transmission System Operator

At the end of 2014, the Government of the Republic of Serbia adopted a Conclusion on Grounds for Restructuring of PE *Srbijagas* which defined that the transmission and distribution system operators should be legally unbundled entities from PE *Srbijagas* while owned by PE *Srbijagas*. The Plan was also harmonized with the Energy Community thereby representing a feedback to the invitation of the Energy Community Ministerial Council sent to Serbia in September 2014 asking from Serbia to comply with its obligations arising from the Treaty establishing the Energy Community regarding the unbundling of the transmission system operator.

PE *Srbijagas* Supervisory Board adopted a decision on the establishment of *Transportgas Srbija* LLC as well as the decision on the establishment of Distribucijagas Srbija LLC on June 22, 2015. On the session held on June 27, 2015, the Government of the Republic of Serbia approved these decisions. These companies were established on August 22, 2015 and registered in the registry of companies as active companies but they did not start operating.

By the Decision of November 19, 2015, the Government of the Republic of Serbia enabled the companies *Transportgas Srbija* LLC and Distribucija Srbija LLC to perform the activities of general interest, transmission and transmission system operator and distribution and distribution system operation under PE *Srbijagas* licence until the licence validity period expires. The Government also recommended that all necessary activities are taken in order to obtain relevant licences as soon as possible.

In addition, by the Conclusion of December 23, 2016, the Government of the Republic of Serbia enabled PE *Srbijagas* to continue performing the activity of general interest – transmission and transmission system operation either independently or via the company *Transportgas Srbija* LLC until the licence for the performance of this activity is obtained. The Government recommended to *Transportgas Srbija* LLC to take all necessary actions in order to obtain this licence as soon as possible.

In line with the EU regulations, the 2014 Energy Law defined three models of organization, i.e. unbundling of the transmission system, i.e. as transmission system operator in line with ownership unbundling model, independent system operator and independent transmission operator.

On November 22, 2018, *Transportgas Srbija* LLC submitted an application for certification according to the independent transmission operator (ITO model) model, but this application was denied by the Agency in February 2019 since the company did not submit the prescribed documentation in the legal time framework and did not thereby prove the compliance with the conditions prescribed for certification according to ITO model. *Transportgas Srbija* LLC resubmitted the ITO model certification application on May 31, 2019 but this application was also denied for the same reasons by the Agency on September 20, 2019.

After *Transportgas Srbija* LLC ceased to be a part of the vertically-integrated company PE *Srbijagas* in 2021, *Transportgas Srbija* LLC submitted a new application for the certification in line with Independent System Operator (ISO) model on November 5, 2021 but they withdraw their application which is why, in March 2022, the Agency adopted a decision on the suspension of the certification procedure which was initiated upon file applicant's request. In 2022, *Transportgas Srbija* LLC did not file a certification application to the Agency in 2023.

The Transmission System Operator *Yugorosgaz-Transport* LLC was legally unbundled from the vertically integrated company *Yugorosgaz* JSC which is the owner of it. On September 2013, *Yugorosgaz-Transport* LLC obtained licence for natural gas transmission and transmission system operation. By the adoption of the Law at the end of 2014, conditions were created for the execution of certification procedure upon the request of this operator in line with the Law.

Acting within the timeframe for certification prescribed by the Law, in August 2016, Yugorosgaz-Transport LLC submitted an application for certification according to the Independent System Operator (ISO model) model to the Agency. Bearing in mind the ownership structure of this company and its mother company, this application was also treated as an application for the certification of a transmission system operator related to third countries.

By adopting a decision in December 2016, the Agency certified Yugorosgaz – Transport LLC Niš as an independent system operator but under the condition that within a year the company should harmonise its organisation and operation in a way providing for the compliance with prescribed conditions related to the independence of the system operation in line with the given model. Otherwise, the certificate will be withdrawn. The harmonisation implies the harmonisation of ratified international treaties concluded with the Russian Federation and the EU, i.e. the countries of the Southeastern Europe which should be done beforehand. In addition, the system operator is instructed to submit the ten-year transmission system development plan, the programme for non-discriminatory treatment and an act signed with the transmission system owner which provides for the guarantees which will enable financing of the transmission system development within the same deadline.

The final certification decision was adopted following a procedure prescribed by the Law, with the participation of a competent body which is authorised to issue their opinion on the decision of the Agency on certification in line with the obligations arising from ratified international treaties. By this final Decision of the Agency Council of June 2017, Yugorosgaz-Transport LLC was certified as an Independent System Operator with an obligation to harmonise its organization and operation in a manner providing for the compliance with conditions related to independence. They were also obliged to submit the compliance programme and evidence on natural gas procurement meant for recovery of losses within the transmission system. The deadline for the compliance with the conditions was one year. Otherwise, the certificate would be withdrawn. From all the above given, the first condition is beyond the jurisdiction of the Agency and its compliance depends exclusively from competent state authorities.

In line with the Decision adopted by the Agency Council of July 13, 2018, Yugorosgaz-Transport LLC was awarded with an additional one-year period for the compliance with the certification conditions according to the Independent System Operator model with an obligation to inform the Agency once in two months on the activities taken to that end. Since Yugorosgaz-Transport LLC did not submit all the evidence on the compliance with the conditions set in the Final Certification Decision to the Agency after the prescribed deadline, on July 15, 2019, the Agency Council adopted a decision on the withdrawal of the certificate issued by the Final Certification Decision of June 2017 to Yugorosgaz-Transport LLC. In 2023, Yugorosgaz-Transport did not file an application for certification since in May 2021, the Government of the Republic of Serbia adopted Action Plan which implied a plan to perform necessary activities in order to harmonise ratified international treaties concluded with the Russian Federation with the Energy Law which should remove all obstacles to the certification of Yugorosgaz-Transport LLC.

Acting in line with the 2014 Law and the Decision of the Energy Agency of the Republic of Serbia on Exemption of New Natural Gas Interconnector ("Official Gazette of RS", No. 15/19), the Limited Liability Company *GASTRANS* LLC, Novi Sad submitted a certification application on June 25, 2019.

By the decision of August 15, 2019 (Preliminary Decision), the Agency Council certified *GASTRANS* LLC conditionally as an Independent Transmission Operator to the extent it is in compliance with the approved exemption (ad hoc ITO model) with an obligation to submit all occupancy permits to the Agency or to register ownership rights over the transmission system facilities and to submit evidence confirming its independent operation and operation over the built transmission system. The deadline for the compliance was 6 months. Otherwise, the certificate would be withdrawn.

The body competent in line with obligations arising from ratified international treaties (Energy Community Secretariat) submitted their Opinion on the Preliminary Decision on Certification of *GASTRANS* LLC on December 22, 2019. Following this, within the legal timeframe, on February 21, 2020, the Council of the Agency adopted the final decision by which *GASTRANS* llc is awarded with a certificate as to an independent natural gas transmission operator. Basically, by this decision, the Preliminary Decision of August 2019 was confirmed since the Agency prescribed the same obligations to *GASTRANS* llc as it was the case in the Preliminary Decision.

In early October 2021, *Gastrans* LLC started performing transmission within the whole gas interconnector (Zajecar – Horgos) and this is the moment when the 6-month deadline became effective as it was set in the final decision on conditional certification of February 22, 2020 on the submission of evidence confirming the compliance with certification conditions. Following the expiry of this deadline, *Gastrans* LLC submitted evidence based on which Agency established that Gastrans LLC complied with requirements defined by the final decision on certification of February 20, 2020. The decision by which the compliance with requirements defined in the final act on the certification is confirmed was adopted by the Agency Council in March 2022.

4.3.2 Price regulation

4.3.2.1 System connection costs

Transmission system connection costs are set by TSO on the basis of elements from the connection application and on the Methodology for Setting Costs of Connection to Natural Gas Transmission and Distribution System ("Official Gazette of RS", No. 42/16 and 140/22) which is adopted by the Agency. The Methodology sets types of costs: design and collection of necessary documentation, procurement of devices, equipment and material, execution of works, costs of expertise and operational tasks, as well as the method of calculation of all costs. After connection costs are set in the connection decision, the TSO is obliged to use market prices of goods, works and services.

The applicant for connection bears the costs of connection to the transmission system. Connection service costs are set by the TSO in line with true costs of individual connection and prescribed segment of cost which was caused by the connection of an applicant's facility to the system.

Since connections on the transmission system cannot be standardized and since each of them is a project of its own, the TSO is obliged to comply with the principles with publicity and non-discrimination and to give the applicant, upon his/her request, insight into the documents which serve as the basis for setting the level of connection costs and for the method of calculation of these costs. The applicant has to cover true connection costs and a part of costs for system development which arose from this connection which depend on characteristics of that connection.

4.3.2.2 Use-of-system charges

Natural gas transmission use-of-system charges were not modified in 2023.

Table 4-9: Average approved natural gas transmission use-of-system charge[13]

RSD/kWh

Transmission system operator	31/12/2022	31/12/2023
Srbijagas/Transportgas Srbija	0.148	0.148
Yugorosgaz-Transport	0.074	0.074

Current charges and chronological review of the natural gas transmission use-of-system charges are available on the website of the Agency (www.aers.rs).

4.3.2.3 Prices of Non-Standard Services

The Law prescribes that in addition to providing services to customers and system users which are charged via use-of-system charge or via connection costs, upon a customer's, i.e. system user's request, the transmission system operator also provides services which are not included in the above stated prices. In addition, the operator provides services when necessary in order to remove the consequences arising from a customer's or system user's acts which are contrary to regulations. Since these services are individual and occurring from occasionally upon a customer's or system user's request, they are called non-standard services.

[13] Average approved charge is the quotient of the maximum approved revenue and approved natural gas quantities

4.3.3 Access to cross-border capacities

During 2023, Serbia had four interconnections with gas pipeline systems of neighbouring countries - two entry and two exit points:

Transportgas Srbija LLC has interconnections:

- Hungary – Serbia (Kiskundorozsma) – entry point and
- Serbia – Bosnia and Herzegovina (Zvornik) – exit point.

Gasrans LLC has interconnections:

- Bulgaria – Serbia (Zaječar) – entry point and
- Serbia – Hungary (Kiskundorozsma) – exit point.

Both interconnections are a part of the transmission system operated by *Transportgas Srbija* LLC, while there are no gas pipelines connected with the transmission systems of neighbouring countries within the transmission system operated by the *Yugorosgaz transport* LLC.

Transportgas Srbija LLC started natural gas transmission via new interconnection Bulgaria (Kalotina) – Serbia (Dimitrovgrad) as of January 1, 2024.

In line with PE *Srbijagas* Transmission Network Code which was adopted in 2013 and which is still applied by *Transportgas Srbija* LLC in certain segments, the first annual capacity allocation was supposed to be organized in early 2014 for the gas year starting in July 2014. Upon PE *Srbijagas* request, the first capacity allocation was postponed for 2015, and afterwards for 2016. Cross-border capacity allocation has not been organized by the system operator *Transportgas Srbija* LLC so far except for transit purposes.

In line with the Network Code, in 2023, in auctions via RBP platform, *Gastrans* LLC offered short-term capacity (quarterly, monthly, daily and intraday) which make 10% of the gas pipeline capacity.

In 2023, *Gastrans* LLC offered commercial backhaul capacity as annual, quarterly, monthly and daily capacity.

In line with the Network Code, Gastrans LLC is obliged to offer daily backhaul capacity for days when 100% of technical capacity of gas pipeline is contracted in the amount which represents the difference between contracted capacity and announced capacity for that day. Daily backhaul capacity in 2023 were not offered for allocation.

4.3.3.1 Capacity allocation on interconnection points and congestion management

As it is mentioned, *Transportgas Srbija* LLC applies certain segments of the PE *Srbijagas* Code. The Code defines the rules for the allocation of all transmission capacity, cross-border capacity included as well as the rules for congestion management. However, *Transportgas Srbija* LLC did not organise the cross-border capacity allocation to all interested parties in 2023 either, either based on the Network Code of PE *Srbijagas* or in another manner, except for transit purposes.

Gas pipeline capacity which is operated by *Transportgas Srbija* LLC in 2023 on the entry point Hungary – Serbia (Kiskundorozma) was used by PE *Srbijagas* while the exit capacity on the interconnector towards Bosnia and Herzegovina was used by *Gazprom Export* for the delivery into BiH and PE *Srbijagas* to cover the demand of the district heating company in Zvornik and in Serbia.

Firm capacity on the entry point Hungary – Serbia was used in the period January – April and October – December 2023 for import of natural gas which was stored in Hungary as supply source in order to cover increased natural gas consumption in Serbia during winter months. Maximum daily quantities in 2023 amounted to 38.04 GWh/day which is 28.52% of maximum technical capacity of this interconnector of 133.38 GWh/day. Average annual utility rate of the interconnector amounted to 3.25% in 2023 (which represents a decrease in comparison to 9.73 in 2022), which is low since the construction of the gas pipeline *Gastrans* LLC made the direction from Bulgaria the main natural gas supply direction for Serbia and Bosnia and Herzegovina.

Maximum daily quantities on the exit point Serbia – Bosnia and Herzegovina in 2023 amounted to 15.19 GWh/day which represents 74.03% of maximum technical capacity of 20.52 GWh/day. Average annual utility rate of this interconnector amounted to 30.88% in 2023 which is lower than 34.52% in 2022. One cannot expect considerable increase in the utility rate of this interconnector since the annual natural gas consumption in Bosnia and Herzegovina is not increasing, nautral gas consumption is considereably higher in winter period thatn in the summer ans since there is no underground storage in Bosnia and Herzegovina.

Gas pipeline *Gastrans* LLC capacity was used during 2023 on the entry point Bulgaria – Serbia and on the exit point Serbia – Hungary by shareholders of *Gastrans* LLC: *Gazprom Export* and PE *Srbijagas* and other seven suppliers. The exit point Serbia were used by PE *Srbijagas* to cover the demand in Serbia and *Gazprom Export* for transit into Bosnia and Herzegovina and both used it to inject natural gas into the underground storage Banatski Dvor.

Maximum daily quantity on the entry point Bulgaria – Serbia in 2023 amounted to 333.90 GWh/day which represents 91.05% of maximum technical capacity of 366.72 GWh/day. Average annual utility rate of this interconnector amounted to 66.88% in 2023.

Maximum daily quantity on exit point Serbia – Hungary in 2023 amounted to 245.69 GWh/day which is 99.97% of maximum technical capacity of 245.76 GWh/day. Average annual utility rate of this interconnector amounted to 68.53% in 2023.

Firm capacity on the exit point Serbia into the transmission system of Transportgas Srbija LLC amounted to 120.96 GWh/day and maximum daily quantity in 2023 amounted to 152.64 GWh/day. Maximum daily quantity was higher than the capacity on the exit point Serbia during the first three months of 2023. Average annual utility rate of this interconnector amounted to 63.54% in 2023.

In January, February and March 2023, on the exit point Serbia into the transmission system *Transportgas Srbija*, monthly capacity was 100% contracted while offered and contracted monthly capacity was higher than the technical capacity.

Higher demand than the available capacities were recorded at two daily capacity auctions in June and at the monthly capacity auction for September 2023 at the Serbia-Hungary exit point.

On June 16, 2023, the total demand from four users for daily capacities exceeded those offered. The achieved price at the auction was 35% higher than the starting price and capacities were allocated to all four participants in the auction. On June 21, 2023, the total demand from four users for daily capacities again exceeded those offered. The achieved price at the auction was 320% higher than the starting price and capacities were allocated to all four participants in the auction.

At the monthly capacity auction for September 2023, capacities were allocated to three participants, and the price was determined after 30 rounds of the auction, being 380% higher than the starting price.

4.3.4 Transmitted natural gas quantities

In 2023, 89,524 GWh of natural gas were withdrawn into *Gastrans* LLC transmission system. These quantities were transmitted for the purpose of: transit for Hungary amounting to 61,470 GWh, delivery into transmission system of *Transportgas Srbija* LLC amounting to 27,996 GWh, while *Gastrans* LLC consumed 58 GWh to cover their own demand.

32,549 GWh were withdrawn into the transmission system *Transportgas Srbija* LLC in 2023. These quantities were transmitted so as to meet the demand on the side: customers in Serbia, transit for Bosnia and Herzegovina, storage, transmission and distribution systems for gas losses recovery and compressor station operations.

937 GWh of natural gas were withdrawn into the transmission system *Yugorosgas-transport* LLC in 2023. These quantities were transmitted to cover the demand of customers in Serbia.

Table 4-10: Transmitted natural gas quantities in 2019 - 2023

Transmitted volumes	2019 GWh	2020 GWh	2021 GWh	2022 GWh	2023 GWh	2023/2022 индекс
Gastrans for Serbia	0	0	22,603	25,731	25,703	99.9
Gastrans for BiH	0	0	1,785	2,585	2,294	88.7
From Hungary for Serbia	23,157	21,997	1,518	4,737	1,584	33.4
From Hungary for BiH	2,493	2,268	862	0	0	0.0
Production on the transmission system	2,913	2,627	2,226	2,016	1,989	98.7
Total	28,563	26,892	28,994	35,069	29,505	84.1
From storage	1,149	3,068	5,222	1,197	980	81.9
Total	**29,712**	**29,960**	**34,216**	**36,266**	**30,485**	84.1

4.3.5 Balancing

According to the Law, the transmission system operator is in charge of natural gas system balancing in the Republic of Serbia and they are also responsible for natural gas market setup and administration. This is the operator with the greatest number of exits from the transmission system, i.e. *Transportgas Srbija* LLC. That operator is obliged to procure gas for balancing purposes and so as to provide secure system operation and recover losses in the transmission system, in line with the principles of minimum costs, transparency and non-discrimination.

Transmission system users are obliged to transfer into the system and withdraw from it the same natural gas volume on daily level. Being natural gas market participants, they are obliged to regulate their balancing responsibility by concluding the contract on transmission which regulates the financial responsibility for the variation between the natural gas volume delivered on entries into the transmission system and withdrawn on exits from the transmission system.

Natural gas transmission system operator is responsible for the establishment and realisation of balancing responsibility of market players and for keeping balancing responsibility registry, in line with the Transmission Network Code and Supplier Switching rules. The Transmission Network Code prescribes the TSO's obligation to conclude a contract with a supplier who will provide the natural gas for balancing purpose when there is lack of it in the system, i.e. who will withdraw extra gas when there is a surplus of it in the system. Balancing responsibility for transmission system users with financial consequences became applicable as of October 1, 2020.

Based on data from *Transportgas Srbija* LLC, in the period between January 1 and December 31, 2023, the operator took following activities for balancing purposes: based on the annual balancing contract, they purchased 297,100 GWh and sold 382,602 GWh. On daily level, they sold 338,776 GWh (237,455 GWh first level imbalance, 92,544 GWh second level imbalance and 8,777 GWh third level imbalance) to system users whose natural gas quantities were lower than on exits. For the same period, based on the annual contract, they sold 308,200 GWh for balancing. On daily level, they purchased 368,319 GWh (225,534 GWh first level imbalance, 133,218 GWh second level imbalance and 9,566 GWh of third level imbalance) from system users whose natural gas quantities were higher on entries than on exits.

The total volume of system users' imbalance amounted to around 2.18% of transmitted quantities. Out of the total imbalance, 65.48% of the volume accounts for the imbalance of the first level, 31.93% accounts for the second level and 2.59% for the third level.

4.4 Regulation of the distribution system operator

In early 2023, 31 distribution system operators performed natural gas distribution and distribution system operation. The license is also held by another company which has not started operating.

Natural gas distribution sector has one dominant feature, i.e. great fragmentation. For this reason, there is no economy of scale and therefore, charges for the use of these networks are higher. Generally speaking, the initiative that would lead to enlargement is not strong enough.

The Methodology for Setting Natural Gas Distribution use-of-system charge and Methodology for Setting Natural Gas Transmission and Distribution System Connection Costs are applied. These two methodologies were amended by the Agency in 2022 in order to harmonise them with the Decree on Conditions for Natural Gas Delivery ("Official Gazette of RS", No. 47/06, 3/10, 48/10 and 49/22).

4.4.1 Unbundling of Distribution System Operator

Distribution companies in Serbia have their natural gas distribution activities and distribution system operation unbundled in terms of accounting from supply and other energy related and non-energy related activities. Except in accounting terms, the Distribution System Operator which is a part of a vertically integrated company has to be independent from other activities which are not related to distribution and distribution system operation in terms of legal form, organization and decision-making process.

In line with the Law (Article 257), the independence of the Distribution System Operator is ensured by having persons responsible for the Distribution System Operator management cannot participate in management bodies of vertically-integrated company which are directly or indirectly responsible for natural gas production, transport or supply in order to secure that persons responsible for the Distribution System Operator management act professionally and independently in operation. In addition, Distribution System Operator should adopt decisions independently from vertically integrated company in terms of funds necessary for operation, network maintenance and development if these are within the limits of the approved financial plan. Also, the Distribution System Operator which is a part of a vertically-integrated company is obliged to adopt the Compliance Programme for Non-Discriminatory Behaviour which includes measures for the prevention of discriminatory behaviour, the method of monitoring the implementation of these measures and obligations of employees aiming at the achievement of set goals. In line with Article 259 of the Law, the given provisions do not apply to distribution system operators with less than 100,000 final customers connected to the system.

At the end of 2023, there were 31 distribution system operators performing distribution and distribution system operation. Apart from the distribution system operators PE *Srbijagas* and Yugorosgaz JSC, this activity was performed by 29 companies among which most of them are owned by municipalities and cities, some of them are partly owned by private and public owners and some of them are private companies. Except for PE *Srbijagas*, all distribution system operators have less than 100,000 connected final customers which is why they are also entitled to deal in supply in both regulated and open market and they are not obliged to unbundle the Distribution System Operator and supplier legally (in line with Article 259 of the Law). PE *Srbijagas* had 144,084 delivery points at the end of 2023. 142,977 of them were for public supply and the remaining 1,107 were supplied at unregulated prices.

In 2015, PE *Srbijagas* adopted a decision on the establishment of a daughter company for natural gas distribution – Distribucijagas Srbija LLC Novi Sad which did not start operating which is why natural gas distribution is still performed by PE *Srbijagas*. The Government of the Republic of Serbia, through its Conclusion of October 4, 2018, allowed JP Srbijagas to continue performing the public interest activity of distribution and distribution system operation either independently or through the capital company Distribucijagas Srbija d.o.o. until obtaining a license for this activity. It also recommended that Distribucijagas Srbija d.o.o. undertake all necessary actions to obtain this license as soon as possible.

4.4.2 Price regulation

4.4.2.1 System connection costs

Distribution system connection costs are set by DSO on the basis of elements from the connection application and on the Methodology for Setting Costs of Connection to Natural Gas Transmission and Distribution System ("Official Gazette of RS", No. 42/16 and 140/22) which is adopted by the Agency. The Methodology sets types of costs: design and collection of necessary documentation, procurement of devices, equipment and material, execution of works, costs of expertise and operational tasks, as well as the method of calculation of all costs. In addition, the DSO is obliged to use market prices of goods, works and services when setting connection costs in the connection decision. The DSO is obliged to comply with the principles with publicity and non-discrimination and to give the applicant, upon his/her request, insight into the documents which serve as the basis for setting the level of connection costs and for the method of calculation of these costs.

The applicant for connection bears the costs of connection to the distribution system. Connection service costs are set by the DSO and they correspond to average costs of construction of standard connection (i.e. to true costs of construction of other types of connections) and prescribed segment of cost which was caused by the connection of an applicant's facility to the system.

The connections on low pressure are grouped into different types in the Methodology and therefore the DSO document on the level of costs of connection of standard connections also includes the level of:

cost of construction of standard connection for each category of standard connection;

cost of construction of connection in case of simultaneous construction of network and standard connection for each category of standard connection;

unit variable cost and

cost of part of the system.

In line with the Law on amendments to the Energy Law ("Official Gazette of RS", No. 40/21), the Agency approves the legal act of the natural gas distribution system operator which establishes the level of costs connection via standard connections in line with the Methodology. In 2023, JKP "Toplana-Šabac" from Šabac, JKP "7 Oktobar" from Novi Kneževac, JP "Gas" from Temerin, "Loznica-gas" d.o.o. from Loznica, "Resava-gas" d.o.o. from Svilajinac, "Sigas" d.o.o. from Požega, "Sombor-gas" d.o.o. from Sombor, AD "Užice-gas" from Užice, JP "Gas-Ruma" from Ruma, and "Yugorosgaz" AD from Belgrade have decided on the costs of connecting a standard connection to the natural gas distribution system, which have been approved by the Agency Council.

4.4.2.2 Use-of-System Charges

Natural gas distribution use-of-system charges were not modified during 2023. Average weighted approved distribution use-of-system charge for all distribution networks in Serbia on December 31, 2023 amounted to 0.42 RSD/kWh. The variation in distribution use-of-system charges with different DSOs is the result of the size and features of the distribution systems, the structure and number of customers, the age of the distribution system and other factors.

Table 4-11: Average approved natural gas distribution use-of-system charge[14]

RSD/kWh

No.	Distribution system operator	31/12/2022	31/12/2023
1	*7 Oktobar, Novi Kneževac*	0.99	0.99
2	*Beogas, Belgrade*	0.69	0.69
3	*Beogradske elektrane, Novi Beograd*	0.55	0.55
4	*Cyrus Energy, Belgrade*	0.69	0.69
5	*Čoka, Čoka*	0.67	0.67
6	*Drugi oktobar, Vršac*	0.67	0.67
7	*Elgas, Senta*	0.71	0.71
8	*Gas – Feromont, Stara Pazova*	0.55	0.55
9	*Gas – Ruma, Ruma*	0.61	0.61
10	*Gas, Bečej*	1.10	1.10
11	*Gas, Temerin*	0.85	0.85
12	*Graditelj, Srbobran*	0.61	0.61
13	*Ingas, Inđija*	0.58	0.58
14	*Interklima, Vrnjačka banja*	0.69	0.69
15	*Komunalac, Novi Bečej*	0.70	0.70
16	*Kovin – Gas, Kovin*	0.47	0.47
17	*Loznica – Gas, Loznica*	0.88	0.88
18	*Novi Gas – Gas, Novi Sad*	0.60	0.60
19	*Polet, Plandište*	0.73	0.73
20	*Resava Gas, Svilajnac*	0.63	0.63
21	*Sigas, Požega*	1.22	1.22
22	*Sombor – Gas, Sombor*	0.57	0.57
23	*Srbijagas, Novi Sad*	0.37	0.37
24	*Srem – Gas, Sremska Mitrovica*	0.49	0.49
25	*Standard, Ada*	0.86	0.86
26	*Suboticagas, Subotica*	0.59	0.59
27	*Toplana – Šabac, Šabac*	0.63	0.63
28	*Užice – gas, Užice*	0.57	0.57
29	*Vrbas – Gas, Vrbas*	0.51	0.51
30	*Yugorosgaz, Belgade*	0.22	0.22
	AVERAGE	0.42	0,42

The current natural gas distribution system use-of-system charges and the chronological review of these charges are available on the Agency's website (www.aers.rs).

4.4.2.3 Prices of Non-Standarad Services

The Energy Law prescribes that in addition to providing services to customers and system users which are charged via use-of-system charge or via connection costs, upon a customer's, i.e. system user's request, the transmission system operator also provides services which are not included in the above stated prices. In addition, the operator provides services when necessary in order to remove the consequences arising from a customer's or system user's acts which are contrary to regulations. Since these services are individual and occurring from occasionally upon a customer's or system user's request, they are called non-standard services. In 2023, JKP "7. Oktobar" Novi Knezevac, PE "Kovin-gas" Kovin, PE "Polet", Plandiste and "Sombor-gas" LLC, Sombor adopted decisions on prices of non-standard services which define types of non-standard services and their prices. The Council of the Agency approved the decisions.

4.4.3 Distributed natural gas quantities

Natural gas quantities are withdrawn into the distribution systems mostly from the natural gas transmission system. Some distribution systems withdraw natural gas from another distribution system, too. Only small natural gas quantities are provided from natural gas production facilities connected to the distribution system. In 2023, only PE *Srbijagas* withdraw gas

[14] In 2023, BOSS Construction, Stari Trstenik applies natural gas distribution use-of-system charges on the same level as of *Srbijagas*, Novi Sad.

directly from production facilities. Table 4-12 indicates natural gas quantities withdrawn into natural gas distribution systems and distributed in 2019-2023.

Table 4-12: Distributed natural gas quantities in 2019-2023

	2019 GWh	2020 GWh	2021 GWh	2022 GWh	2023 GWh	2023/2022 Index
Total distributed quantities	14,959	16,426	18,622	18,016	17,854	99.10
withdrawn from the transmission system	13,820	15,400	17,186	16,950	16,117	95.09
withdrawn from distribution systems	1,047	934	1,344	1,162	1,683	144.84
withdrawn from production facilities	92	92	92	54	54	100
losses	133	154	226	151	217	143.71
	0.89%	0.94%	1.21%	0.83%	1.22%	146.99

4.5 Natural gas market

In the natural gas sector, only bilateral market is developed. Market players include:

- producer (1);
- suppliers (62);
- public suppliers (31);
- final customers (340,300 using regulated supply and 1,207 in the open market);
- TSOs (3);
- DSOs (32), one of them does not perform the activity and
- storage operator (1).

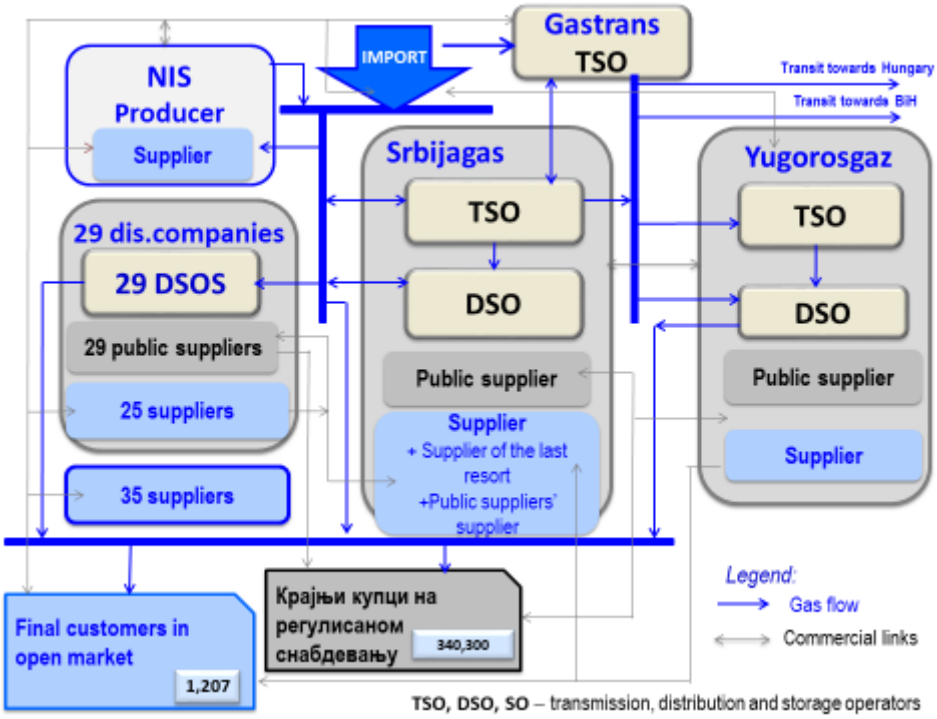

Figure 4-4: Natural gas market scheme at the end of 2023

Being a supplier in the open market, PE *Srbijagas* was also defined as the supplier of public supplier and the supplier of the last resort in line with the Law. On the wholesale market, participants traded in natural gas at free prices, while on retail market, supply was organized at free and regulated prices since all customers except households and small customers had to procure natural gas in the open market in 2023. Households and small customers had an option to select a supplier in the open market although they can always return to the public supplier.

By Decisions of December 11, 2020 and of July 2, 2021, September 3, 2021, September 16, 2022 and September 28, 2023, the Government of the Republic of Serbia appointed PE *Srbijagas* to be the supplier of natural gas public suppliers in 2023 and PE *Srbijagas* was obliged to supply all the public suppliers demanding it including the public supplier PE *Srbijagas* with natural gas under the same conditions and at the same price. The method for modification of this price was set by the

Government of the Republic of Serbia. PE *Srbijagas* will have the same role until October 2024 based on the decision of the Government of the Republic of Serbia of September 28, 2023.

If one reviews each distribution system in Serbia, Table 4-13 indicates the ratio between the regulated and open market depending on the number of delivery points which are supplied either on the open market or on the regulated one.

Table 4-13 Ratio between regulated and open markets for each distribution system depending on the number of delivery points

No.	Natural gas distributer	% of delivery points in the open market	% of delivery points in the regulated market
1	*7. Oktobar, Novi Kneževac*	0.55%	99.45%
2	*Beogas, Belgrade* (with merged *Rodgas)*	0.62%	99.38%
3	*Beogradske elektrane, Novi Beograd*	0.08%	99.92%
4	*Boss construction, Trstenik*	91.95%	8.05%
5	*Čoka, Čoka*	0.72%	99.28%
6	*Drugi oktobar, Vršac*	0.43%	99.57%
7	*Elgas, Senta*	0.18%	99.82%
8	*Gas – Feromont, Stara Pazova*	0.36%	99.64%
9	*Gas – Ruma, Ruma*	0.45%	99.55%
10	*Gas, Bečej*	0.88%	99.12%
11	*Gas, Temerin*	0.15%	99.85%
12	*Graditelj, Srbobran*	0.34%	99.66%
13	*Ingas, Inđija*	0.21%	99.79%
14	*Interklima, Vrnjačka banja*	2.42%	97.58%
15	*Komunalac, Novi Bečej*	0.19%	99.81%
16	*Kovin – Gas, Kovin*	0.55%	99.45%
17	*Loznica – Gas, Loznica*	4.97%	95.03%
18	*Novi Sad – Gas, Novi Sad*	0.48%	99.52%
19	*Polet, Plandište*	0.81%	99.19%
20	*Resava Gas, Svilajnac*	0.64%	99.36%
21	*Cyrus energy, Belgrade*	0.00%	100.00%
22	*Sigas, Požega*	0.88%	99.12%
23	*Sombor – Gas, Sombor*	0.81%	99.19%
24	*Srbijagas, Novi Sad*	0.77%	99.23%
25	*Srem – Gas, Sremska Mitrovica*	0.42%	99.58%
26	*Standard, Ada*	0.86%	99.14%
27	*Suboticagas, Subotica*	0.76%	99.24%
28	*Toplana - Šabac, Šabac*	0.19%	99.81%
29	*Užice-gas, Užice*	0.36%	99.64%
30	*Vrbas – Gas, Vrbas*	0.90%	99.10%
31	*Yugorosgaz, Belgrade*	5.99%	94.01%

According to the data on the percentage of delivery points in the open and regulated markets for each distribution system, it is evident that there is still a small number of delivery points where natural gas is delivered at free, market prices. Since households account for 95% of the total number of delivery points and since they are entitled to supply at regulated prices, such high shares of public supply on the distribution system are expected. In comparison to last year, these percentages have not changed much which contributes to the trend that there is no incentive for households to switch from public supply.

If one reviews delivered quantities, Figure 4-5 indicates the ratio between regulated and open market for each distribution system depending on the level of delivered quantities for delivery points which are supplied either in the open or regulated market.

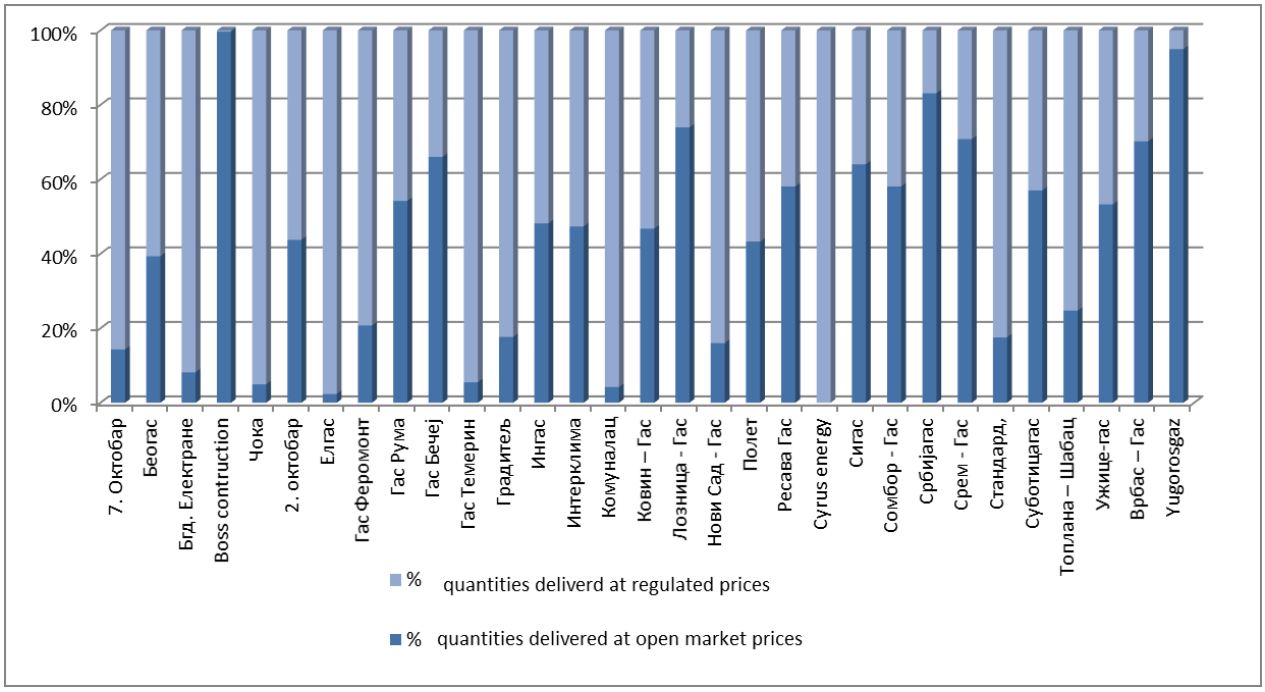

Figure 4-5: Ratio between regulated and open market for each distribution system depending on the level of delivered quantities

4.5.1 Wholesale market

In the wholesale natural gas market, purchase and sale are performed directly between market participants. In 2023, wholesale natural gas market was based on trade among natural gas suppliers and natural gas suppliers and natural gas producers. In this market, in 2023, only one supplier and NIS as the producer sold natural gas to other suppliers and only PE *Srbijagas* as the public suppliers' supplier sold natural gas to all public suppliers.

4.5.1.1 Supply of public suppliers

Except for gas purchase for public suppliers' sake, the wholesale natural gas market was based on bilateral contracts between suppliers themselves and between producers and suppliers. In 2023, there was one company and a producer in the wholesale market which sold natural gas to suppliers and to public suppliers in order to meet the final customers' demand. The average weighted wholesale price at which natural gas was sold by suppliers to other suppliers in 2023 amounted to 4.34 RSD/kWh. It is by 26.2% higher than the one last year. Out of it, average weighted wholesale price at which suppliers sold natural gas to public suppliers in 2023 amounted to 4.09 RSD/kWh. It is by 29.4% higher than the price last year.

4.5.1.2 Regional coupling

The Transmission System Operator from Hungary developed a platform for capacity allocation and booking on interconnectors and this platform is also used by the Transmission System Operators in Romania, Bulgaria and Greece for all their interconnectors, while Austria and Croatia uses it for interconnectors towards Hungary. *Gastrans* LLC is the only Transmission System Operator in Serbia which uses the platform for capacity allocation and booking on interconnectors which was developed by the Hungarian Transmission System Operator.

4.5.2 Retail market

In 2023, final customers procured and spent 25,443 GWh of natural gas in the market. In addition, NIS also spent 1,994 GWh of gas they produced and this quantity was not placed in the market. 1,207 customers procured gas in the open market, while 2 of them were also using supply of the last resort. In total, 20,741 GWh were delivered to customers in the open market (supply of the last resort covered 5.24 GWh), i.e. 81.5% of the total gas volume delivered to final customers. 24 suppliers were selling gas to them (PE *Srbijagas* with the greatest share – 88.99%). In 2023, households and small customers with annual consumption lower than 100,000 m^3 and with all facilities connected to the distribution system were entitled to regulated public supply. 4,703 GWh were delivered to them.

The natural gas volumes delivered in order to provide supply in the open market and in the regulated market are presented in Table 4-14.

Table 4-14: Total natural gas consumption (in open and regulated markets)

	2022 GWh	2023 GWh	2023/2022 Index
Consumed in the open market	21,453	20,741	96.7
Consumed in the regulated market	4,730	4,703	99.4
Total in the market	**26,183**	**25,444**	**97.2**

Based on the data provided by natural gas suppliers and public suppliers, average weighted retail price in the open market in 2023, including transmission and distribution use-of-system charges amounted to 4.96 RSD/kWh. In was by 23.4% higher than the price last year. The average weighted retail price in the regulated market amounted to 4.29 RSD/kWh. It was by 26.5% higher than last year. For customers from the small consumption group which also includes households, the price amounted to 4.31 RSD/kWh and it was by 23.9% higher than last year.

PE *Srbijagas* was the supplier of the last resort selected by the Government of the Republic of Serbia in line with the Law for the supply of the last resort of final customers who are not entitled to public supply. Average realised retail price of the supply of the last resort amounted to 5.88 RSD/kWh. It was by 28.9% higher than last year.

In 2023, only 8 DSOs delivered more than 300 GWh to customers, while 12 of them delivered less than 5 GWh.

The greatest share of natural gas, i.e. 20,329 GWh (80%) of total quantities was sold to customers by PE *Srbijagas* in 2023. The second greatest share was sold by *Novi Sad Gas* sold 946 GWh of gas, i.e. around 3.72% and *Yugorosgaz* JSC with 816 GWh, i.e. 3.21% of total consumed quantities in 2023. Individual share of other suppliers amounts to below 2% of total quantities.

Natural gas volumes sold to final customers by suppliers (excluding the gas both produced and consumed by NIS) in 2022 and 2023 are given in Table 4-15.

Table 4-15: Natural gas sale to final customers in 2022 and 2023

No.	Supplier's name	2022 (MWh)				2023 (MWh)				2023/2022			
		Households	DHCs	Industry and others	Total	Households	DHCs	Industry and others	Total	Households	DHCs	Industry and others	Total
1	7. Октобар, Нови Кнежевац	13,449	0	3,304	16,753	13,230	0	2,805	16,035	98	0	85	96
2	Беогас, Београд	187,991	3,940	178,013	369,944	184,782	0	193,557	378,339	98	0	109	102
3	Београдске електране, Нови Београд	49,078	0	7,585	56,663	47,833	0	6,307	54,140	97	0	83	96
4	Босс петрол, Трстеник	33	0	191	224	0	0	34	34	0	0	18	15
5	Чока, Чока	5,425	0	2,051	7,476	5,323	0	2,026	7,349	98	0	99	98
6	Други октобар, Вршац	128,062	0	112,936	240,998	123,152	0	112,555	235,707	96	0	100	98
7	Елгас, Сента	21,567	0	6,034	27,601	20,663	0	5,635	26,298	96	0	93	95
8	Гас - Феромонт, Стара Пазова	217,754	0	122,586	340,340	214,227	0	174,896	389,123	98	0	143	114
9	Гас - Рума, Рума	97,676	14,213	150,457	262,347	95,530	15,008	136,779	247,317	98	106	91	94
10	Гас, Бечеј	26,518	0	20,657	47,175	26,082	0	19,609	45,691	98	0	95	97
11	Гас, Темерин	92,921	0	21,115	114,036	89,961	0	19,916	109,877	97	0	94	96
12	Градитељ, Србобран	23,142	0	7,685	30,827	23,119	0	4,052	27,171	100	0	53	88
13	Ингас, Инђија	127,605	0	178,632	306,237	123,143	0	209,561	332,704	97	0	117	109
14	Интерклима, Врњачка бања	14,040	0	18,383	32,423	14,463	0	18,807	33,270	103	0	102	103
15	Комуналац, Нови Бечеј	23,460	0	7,992	31,451	23,805	0	7,269	31,074	101	0	91	99
16	Ковин – Гас, Ковин	59,245	10,073	38,387	107,705	60,860	9,501	42,071	112,432	103	94	110	104
17	Лозница - Гас, Лозница	34,541	32,974	62,350	129,865	34,542	30,811	71,703	137,056	100	93	115	106
18	Нови Сад Гас	668,526	11,104	302,097	981,727	653,834	10,968	280,665	945,467	98	99	93	96
19	Полет, Пландиште	25,024	0	26,968	51,992	28,276	0	16,816	45,092	113	0	62	87
20	Ресава Гас, Свилајнац	7,538	0	21,667	29,205	7,364	0	20,531	27,895	98	0	95	96
21	Сајрус енерџи	26,318	0	4,307	30,625	25,396	0	4,208	29,604	96	0	98	97
22	Сигас, Пожега	5,244	0	3,367	8,611	5,548	0	3,567	9,115	106	0	106	106
23	Сомбор - Гас, Сомбор	35,206	0	50,697	85,903	36,153	0	39,534	75,687	103	0	78	88
24	Србијагас, Нови Сад	1,607,663	5,093,752	14,258,695	20,960,110	1,586,809	4,928,843	13,813,680	20,329,332	99	97	97	97
25	Срем - Гас, Сремска Митровица	88,752	8,208	245,400	342,360	89,337	7,699	196,126	293,162	101	94	80	86
26	Стандард, Ада	12,231	0	13,608	25,839	12,585	0	12,782	25,367	103	0	94	98
27	Суботицагас, Суботица	134,502	0	143,092	277,594	131,280	0	137,767	269,047	98	0	96	97
28	Топлана – Шабац, Шабац	44,667	0	10,002	54,669	43,212	0	20,113	63,325	97	0	201	116
29	Ужице-гас, Ужице	41,378	48,119	21,027	110,524	43,273	48,190	22,332	113,795	105	100	106	103
30	Врбас – Гас, Врбас	29,818	0	6,838	36,656	28,695	0	7,601	36,296	96	0	111	99
31	Yugorosgaz, Београд	26,431	283,865	580,503	890,799	32,129	295,115	489,025	816,269	122	104	84	92
32	Цестор Векс, Крушевац	0	23,659	108,660	132,319	0	22,997	89,209	112,206	0	97	82	85
33	King gas, Београд	0	0	42,733	42,733	0	0	68,391	68,391	0	0	160	160
34	Сербхунгас, Нови Сад	0	0	0	0	0	0	201	201	0	0	0	
	Total:	**3,875,805**	**5,529,907**	**16,778,019**	**26,183,731**	**3,824,606**	**5,369,132**	**16,250,130**	**25,443,868**	**99**	**97**	**106**	**97**

4.5.2.1 Sale of natural gas on regulated market

In 2023, natural gas public supply prices were modified in January, May and November due to modification of procurement price of natural gas for public supply. Average weighted approved natural gas price for all customers entitled to public supply in Serbia on 31/12/2023 amounted to 4.54 RSD/kWh while, for small consumption group which also includes households, it amounted to 4.86 RSD/kWh.

Table 0-1: Average approved natural gas public supply price[15]

RSD/kWh

No.	Natural gas public supplier	All customers		Small customers	
		31/12/2022	31/12/2023	31/12/2022	31/12/2023
1	*7 Oktobar, Novi Kneževac*	4.08	5.23	4.14	5.29
2	*Beogas, Belgrade*	3.95	5.10	3.99	5.14
3	*Beogradske elektrane, Novi Beograd*	3.54	4.69	3.61	4.75
4	*Cyrus Energy, Belgrade*	3.74	4.90	3.75	4.90
5	*Čoka, Čoka*	3.82	4.97	4.07	5.22
6	*Drugi oktobar, Vršac*	3.68	4.83	3.90	5.05
7	*Elgas, Senta*	3.76	4.92	3.77	4.94
8	*Gas – Feromont, Stara Pazova*	3.55	4.70	3.63	4.78
9	*Gas – Ruma, Ruma*	3.96	5.12	4.04	5.20
10	*Gas, Bečej*	4.34	5.50	4.37	5.53
11	*Gas, Temerin*	3.80	4.95	3.82	4.97
12	*Graditelj, Srbobran*	3.69	4.85	3.85	5.01
13	*Ingas, Inđija*	3.53	4.68	3.69	4.84
14	*Interklima, Vrnjačka banja*	3.57	4.72	3.69	4.83
15	*Komunalac, Novi Bečej*	3.74	4.90	3.82	4.97
16	*Kovin – Gas, Kovin*	3.48	4.64	3.79	4.94
17	*Loznica – Gas, Loznica*	4.16	5.30	4.16	5.30
18	*Novi Sad – Gas, Novi Sad*	3.59	4.74	3.69	4.84
19	*Polet, Plandište*	3.79	4.94	4.01	5.17
20	*Resava Gas, Svilajnac*	3.82	4.97	3.88	5.02
21	*Sigas, Požega*	4.65	5.81	4.67	5.84
22	*Sombor – Gas, Sombor*	3.86	5.02	3.90	5.06
23	*Srbijagas, Novi Sad*	3.34	4.49	3.63	4.77
24	*Srem – Gas, SrEMSka Mitrovica*	3.43	4.59	3.61	4.76
25	*Standard, Ada*	3.94	5.10	4.04	5.20
26	*Suboticagas, Subotica*	3.52	4.67	3.66	4.81
27	*Toplana – Šabac, Šabac*	3.58	4.73	3.59	4.74
28	*Užice – gas, Užice*	3.61	4.77	3.68	4.84
29	*Vrbas – Gas, Vrbas*	3.47	4.62	3.68	4.83
30	*Yugorosgaz, Belgade*	3.06	4.20	3.28	4.41
	AVERAGE	**3.39**	**4.54**	**3.71**	**4.86**

The current natural gas public supply prices and the chronological review of these charges are available on the Agency's website (www.aers.rs).

Figure 4-6 indicates the change of average approved natural gas price for all customers entitled to public supply and for small consumption which also includes households separately.

[15] In 2023, Boss Construction, Stari Trstenik applied natural gas public supply prices on the level of those of *Srbijagas*, Novi Sad.

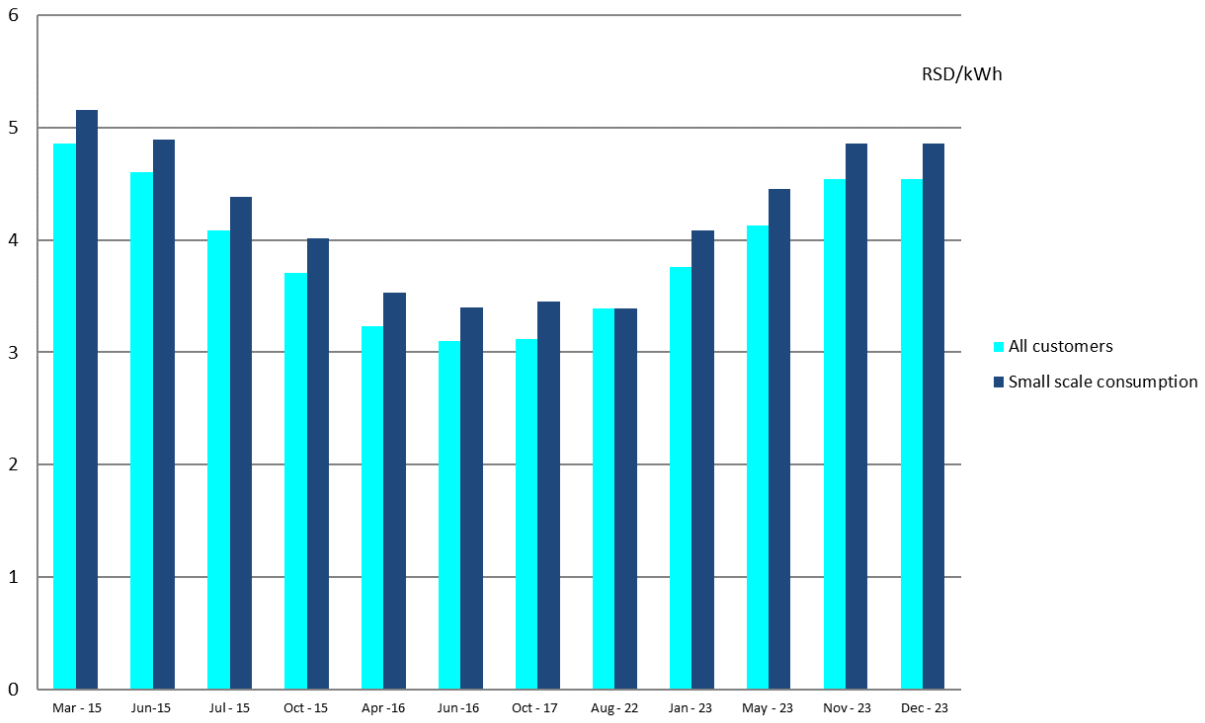

Figure 0-1: Change of average approved public supply natural gas price

The costs of natural gas purchase represent the dominant share within natural gas public supply tariff with all public suppliers. On December 31, 2023, the costs of natural gas procurement account for around 87% of the total average approved price of public suppliers. Figure 4-7 indicates the structure of average regulated natural gas public supply tariff of PE *Srbijagas* of 4.49 RSD/kWh which was applied on December 31, 2023.

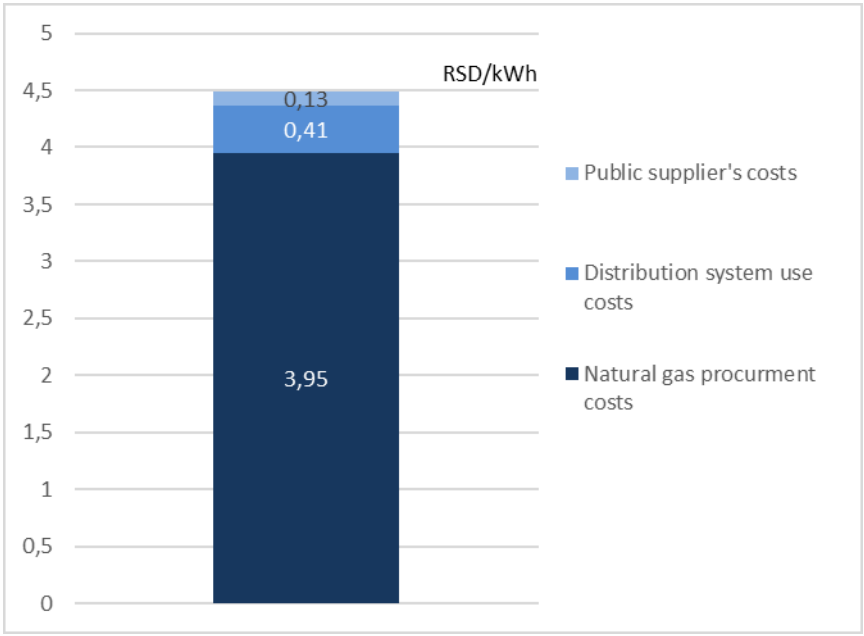

Figure 0-2: Structure of average approved natural gas public supply price of PE *Srbijagas* on 31/12/2023

Figure 4-8 indicates the comparison between natural gas prices in Serbia and in other EU countries and in the region for reference customers from the household category in the second half of 2023.

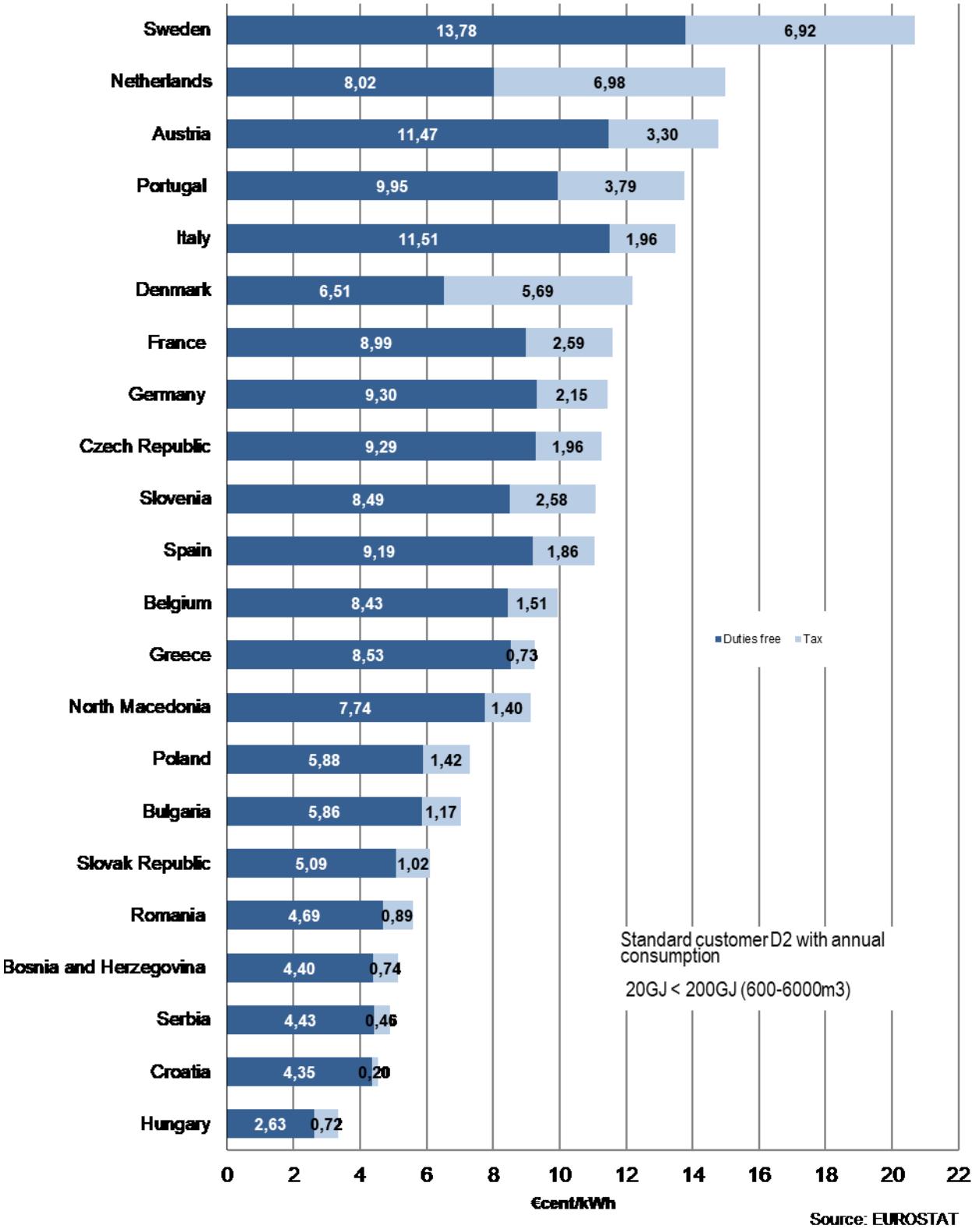

Figure 0-3: Natural gas prices for households – second half of 2023

Figure 4-9 indicates a more detailed structure of elements of the natural gas household prices in some of European capitals in December 2023.

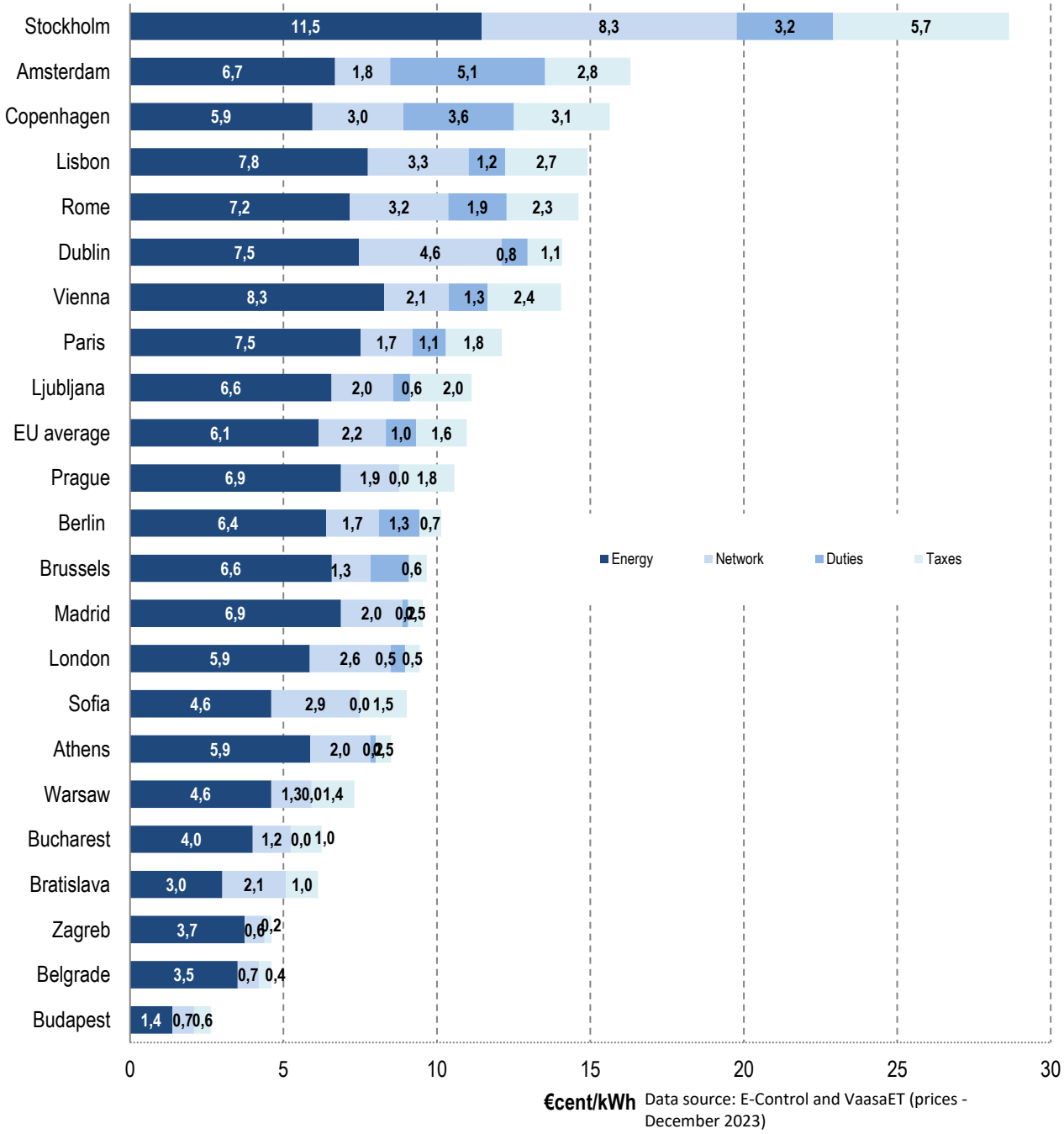

Figure 0-4: Structure of natural gas household prices in some of European capitals in December 2023

Figure 4-10 indicates the structure of the final natural gas price for households in some European capitals in December 2023 given in purchase power parity. Thereby, when comparing prices, one also took into consideration the differences in salaries, living standard and wealth between European countries. In this case, natural gas prices for households in Belgrade are slightly lower in comparison to the average price in other European capitals, which is primarily the result of a different living standard in European countries.

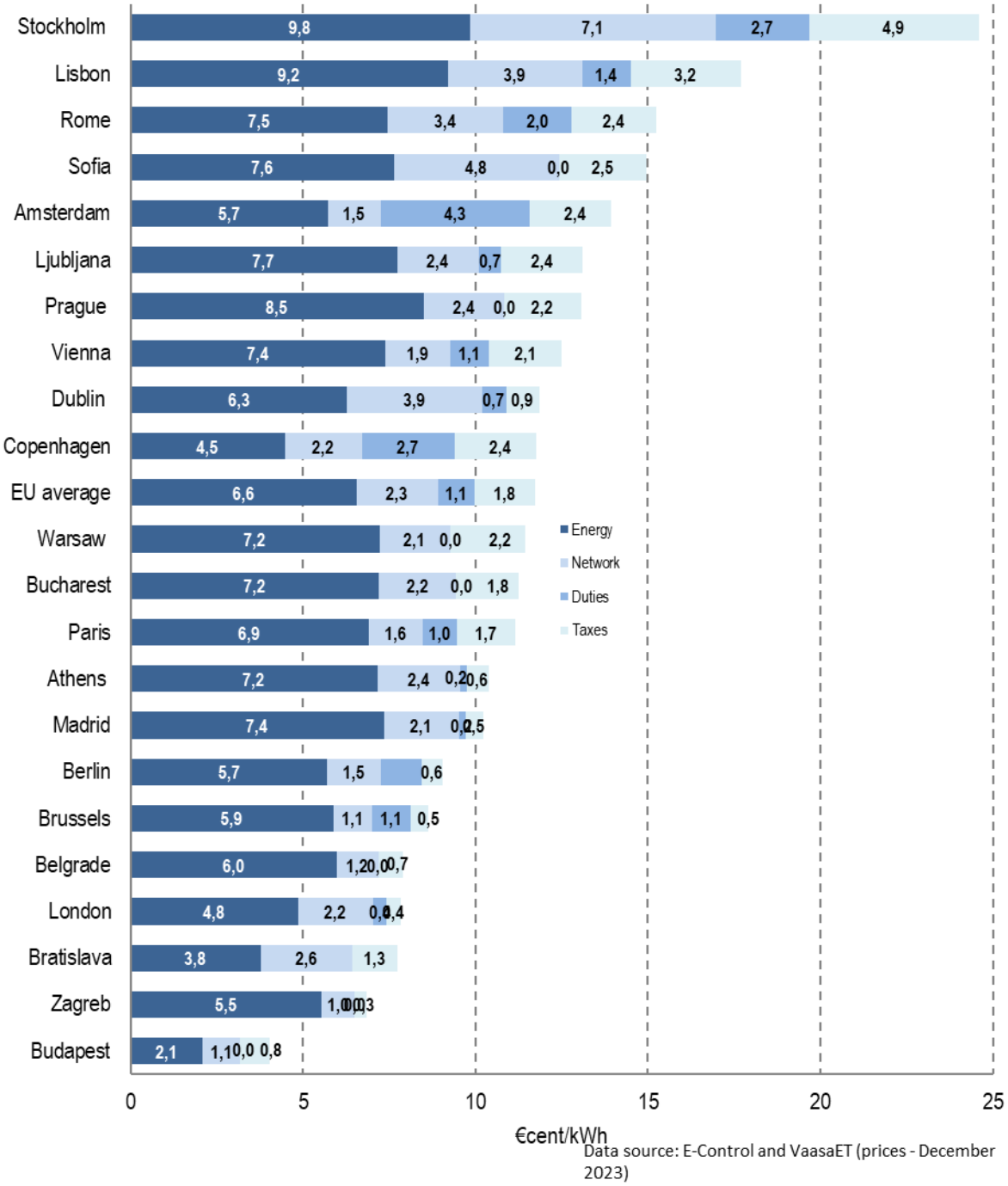

Figure 0-5: Structure of natural gas household prices in some of European capitals in December 2023 given in purchase power parity

Figure 4-11 indicates the comparison between the natural gas prices for a reference customer from the category – industry in Serbia and in other countries, either from the EU or from the region, in the second half of 2023. The variation between prices is greatly influenced by different tax policy, i.e. different duties and taxes borne by industrial consumers.

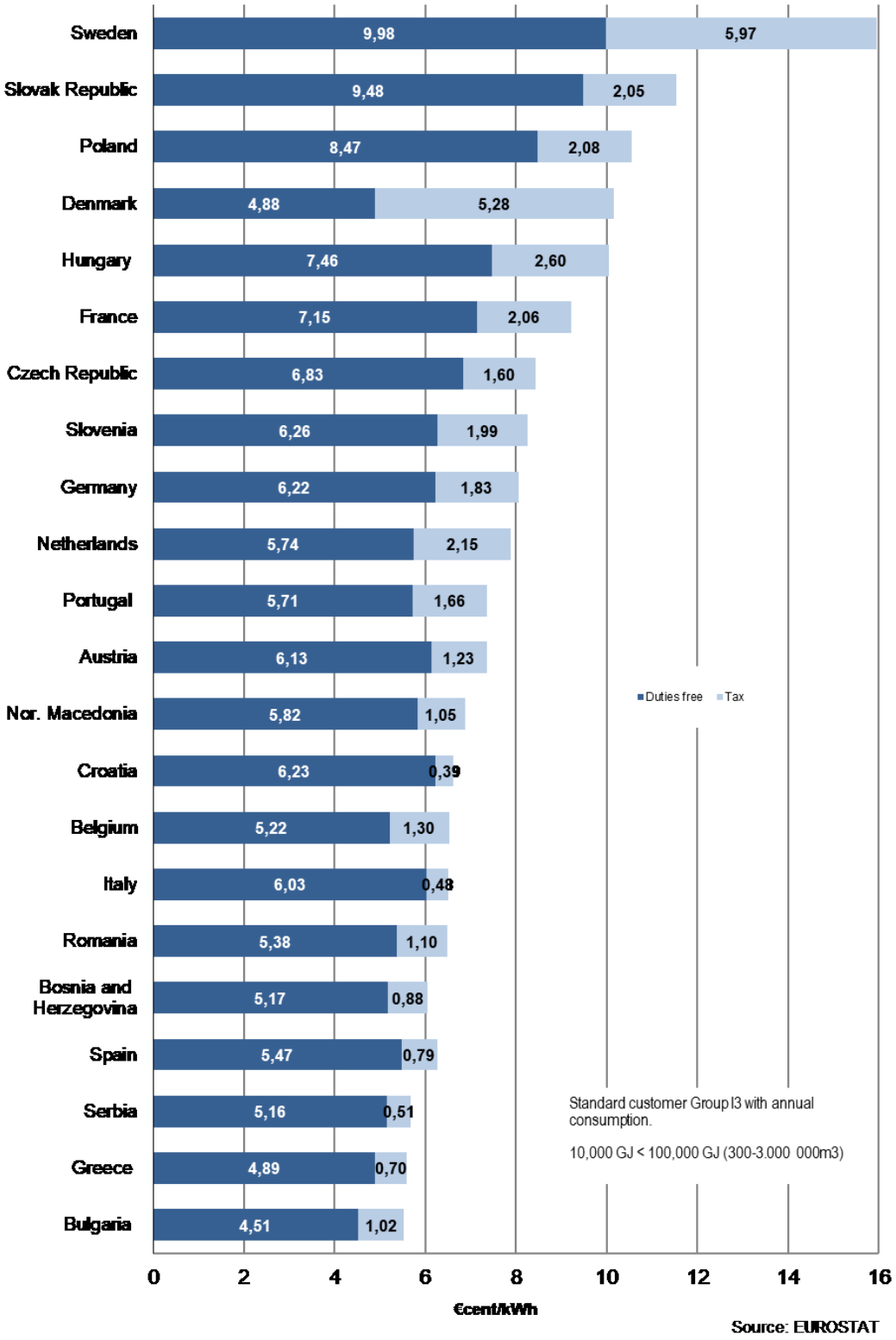

Figure 0-6: Natural gas prices for industry – second half of 2023

4.5.2.2 Supplier switching

Rules on Supplier Switching were adopted in July 2015. Based on experience in the enforcement, amendments of the Rules were prepared in 2016 and adopted in early 2017. These Rules regulate conditions and procedure for the switch of a supplier supplying final customers in line with the contract on full natural gas supply. In order to monitor this procedure, the Agency collected data on supplier switching from TSO and DSO in 2016, too and analysed difficulties suppliers and customers faced in realisation. The data on supplier switching on the transmission system relate to the metering systems which are within the system of *Transportgas Srbija* and of *Yugorosgaz-transport* LLC, since there are no final customers connected to the transmission system of *Gastrans* LLC.

Within the transmission system, out of 62 metering points for final customers, no suppliers were switched on any of metering points in 2023. On the transmission system of *Yugorosgas-transport* LLC, there was one application for supplier switch which was not realised successfully.

With 6 DSOs, there was supplier switch within their systems in 2023. On the distribution level, the total number of delivery points for final customers at the end of 2023 amounted to 342,840. Out of that number, suppliers were switched on 45 metering points, where 37.3 GWh were delivered. It amounts to 0.21% of natural gas quantities out of total 17,637 GWh delivered from distribution systems, i.e. 0.15% of 25,444 GWh of natural gas which was spent in the market (without consumption of NIS from their own production).

In total, in 2023, suppliers were switched on 45 of total 342,902 metering points for final customers within both transmission and distribution system. Out of total consumption in the market (without consumption of NIS covered from quantities from their own production which were not in the market), 0.15% of natural gas quantities were subject to gas supplier switch.

4.6 Monitoring and regulation of quality of delivery and supply

As the Law prescribes, the Agency adopts the Rules on Monitoring Technical and Commercial Indicators and on Regulating Quality of Electricity and Natural Gas Delivery and Supply. The Agency Council adopted these rules in December 2013 and they entered into force in early 2014. The Rules prescribe the method and deadlines for the collection of data from energy entities operating in the field of natural gas transmission, distribution and supply, in order to establish the system of delivery and supply quality regulation.

Reliability of system operations and natural gas quality are defined as technical indicators of quality, while timely compliance with prescribed obligations which affect the quality of natural gas delivery and supply were set as commercial indicators of quality.

These rules define that the energy entities gather the data on the indicators of natural gas delivery and supply in a systematic and the same way and inform the Agency on this once a year.

Data collection is performed on annual level. It was initiated in 2015 in order to enable the Agency to monitor the quality of delivery and supply and compare the results of energy entities which perform the same energy activity based on submitted data and reports.

4.6.1 Continuity of delivery

The continuity of natural gas delivery is set on the basis of the number and duration of interruptions in natural gas delivery and it is monitored both on the transmission and distribution system. The data on continuity of delivery on the distribution system were submitted by 31 DSOs. Based on the submitted data, annual indicators of continuity of delivery were calculated.

4.6.1.1 Continuity of delivery from transmission systems

The data on the continuity of delivery within transmission systems which are monitored are the following:

- number of planned and unplanned interruptions;
- duration of interruptions and
- time of announcement of planned interruptions.

Table 0-2: Interruptions within transmission systems indicated per different causes

TSO	Interruption causes					
	planned interruptions		unplanned interruptions		vis major	
	number of interruptions	total duration (min)	number of interruptions	total duration (min)	number of interruptions	duration
Transportgas Srbija	28	23,430	1	1749	0	0
Yugorosgaz-Transport	0	0	0	0	0	0

In 2023, natural gas transmission system operators submitted data on the number and duration of planned and unplanned interruptions in line with the causes of interruptions and these data are given in Table 4-17.

Within the transmission system of *Transportgas Srbija*, there were 28 planned interruptions which lasted 23,430 minutes and, in line with the rules, planned works on the gas pipeline which were activities of the system operator are stated as the cause in all 28 cases. In 2023, there was one unplanned interruption which was caused by a third party activity which lead to gas pipeline damage due to construction works. This scale of planned works on gas pipeline facilities maintenance as well as their duration were considerably lower than last year when there were 55 planned interruptions with the total duration of 42,660 minutes. There were no events causing natural gas delivery interruptions within the transmission system of *Yugorosgaz-Transport*.

4.6.1.2 Continuity of delivery from distribution systems

Natural gas distribution system operators submitted data on the number and duration of interruptions for 2023 according to the causes which led to interruptions longer than 60 minutes, and these served for the calculation of delivery continuity indicators SAIFI[16] and SAIDI[17] both for planned and unplanned interruptions. The data were given in total for all distribution system and maximum and minimum SAIFI and SAIDI realised in single distribution system. Summary data on the continuity of delivery from distribution system refer to 342,840 delivery points, i.e. on 100% delivery points.

Table 0-3: Summary indicators of continuity of distribution systems for unplanned interruptions

Interruption cause	Unplanned interruptions				
	Number of interruptions	SAIFI (number of interruptions/user)	SAIDI (min/user)	Maximum reached SAIFI	Maximum reached SAIDI
Delivery reduction from upstream system	0	0.00	0.00	0.00	0.00
Gas leak	48	0.11	39.19	0.42	84.13
Third party	93	0.01	6.85	0.13	151.61
Inadequate network capacity	0	0.00	0.00	0.00	0.00
Other reasons	0	0.00	0.00	0.00	0.00
Total	**141**	**0.13**	**46.06**	**0.55**	**235.74**

As it was the case previous years, the data show that there were no unplanned interruptions caused by inadequate network capacity and the greatest number of unplanned interruptions in 2023 was caused by the third party operation. In comparison to last year, the number of unplanned interruptions caused by third party decreased considerably, while the number of interruptions caused by gas leak increased.

Table 0-4: Summary indicators of continuity of distribution systems for planned interruptions

Interruption cause	Planned interruptions				
	Number of interruptions	SAIFI (number of interruptions/user)	SAIDI (min/user)	Maximum reached SAIFI	Maximum reached SAIDI
Cause within a system connected to it	77	0.03	32.32	0.08	76.62
Administrative interruption	21	0.06	41.30	1.04	1050.81
Operator's interruption	94	0.11	26.87	0.57	308.56
Uncategorized interruption	0	0.00	0.00	0.00	0.00
Total	**192**	**0.20**	**100.49**	**1.69**	**1435.99**

When continuity indicators SAIFI and SAIDI for planned interruptions are analysed, calculated based on available data, in terms of interruption duration per user, administrative interruptions and interruptions caused by distribution system operator's activities had the biggest impact on customers.

Summary data on delivery continuity within all distribution systems for which data were submitted both in terms of planned and unplanned interruptions are given in Table 4-20.

[16] SAIFI (number of interruptions/delivery point) - average frequence of interruptions per each user; it is calculated as a quotient of the cumulative number of interruptions and total number of users

[17] SAIDI (min/user) - average duration of interruptions in minutes per user and it is calculated as a quotient of cumulative duration of interruption and total number of users

Table 0-5: Summary continuity indicators of distribution systems

Type of interruptions	Summary continuity indicators		
	Number of interruptions	SAIFI (number of interruptions/user)	SAIDI (min/user)
Planned interruptions	192	0.2	100.49
Unplanned interruptions	141	0.13	46.06
Total	**541**	**0.25**	**163.54**

4.6.2 Commercial quality

Rules on monitoring quality also define the data which system operators and suppliers have to register in order to enable monitoring commercial quality.

The data which are collected are grouped in four areas which describe commercial quality:

1) connection, suspension and disconnection;
2) access to the system;
3) metering and charging and
4) customer service.

In 2022, the data on commercial quality were collected on the annual level and it still takes time for them to achieve adequate level of reliability and accuracy. Out of 31 DSOs which performed the activity in 2023, data were submitted by all distributers.

4.6.2.1 Connection, disruption and disconnection

The data related to settling applications for connection are given in total in Table 4-21. Application for connection

Table 0-6: Application for connection

Applications for connection			
Number	of filed applications		22617
	of settled applications	approving connection	18,318
		denying connection	196
		settled otherwise	3,012
		Total	21,199
		within 15 days	15,833
%	of settled applications in comparison to the number of filed ones		93.7
	of applications approving connection in comparison to the number of settled ones		86.4
	of settled applications within 15-day deadline		74.4
Average time	necessary for settling an application – days		11

After the connection is constructed and all conditions for connection are met, operators have a 15-day deadline to connect the facility to the distribution system. The data on the connection of facilities are given in total in Table 4-22. The data indicate a considerable increase in the number of connection applications since the percentage of applicatioins settled within the prescribed deadline of 15 days dropped from 99% to 74%. As far as the very connection is concerned, the number of facilities connected within the prescribed deadline of 15 days decreased slightly to 98.06% in 2023 while the average time necessary for the connection increased from 9 to 20 days.

Table 0-7: Connection of facilities

Connection		
Number	of connected facilities	16,526
	of facilities connected within a 15-day deadline	16,206
%	of facilities connected within a 15-day deadline	98.06
Average time - days	Necessary for connection since the day all conditions are met	9.8

4.6.2.2 Access to the system

Since natural gas market has become open for all customers since the beginning of 2015, one could expect that customers' suppliers which entered the market will be submitting applications for the access to the systems to which the facilities of these customers are connected. Although the supplier switch is still not that common, there was not DSO appealing against an act of the system operator on the access to the system.

4.6.2.3 Metering and billing

13,313 objections were submitted against billing in 2023 which is considerably more than 7,319 in 2022. Justified objections which were submitted against billings included the following causes: inaccurate reading 88.9%, inaccurate billing (energy section) 3.52%, inaccurate invoicing 1.14%, inaccurate metering 4.51%, and other 1.94%. In 2023, time necessary for settling objections to billing lasted between 1 and 5 days depending on the distribution system operator. As well as it was the case in previous years, one may notice that among objections against billing the greatest number of them relate to inaccurate reading while there is a significantly smaller number of inaccurate metering. There was a slightly lower percentage of objections to energy data in the calculation in comparison to objections to metering in 2023. The number of other reasons for objections against billing is very low.

The total number of filed applications filed by users – final customers for extraordinary check of metering equipment in 2023 amounted to 126 and 125 checks were performed. During these checks, there were 80 noticed irregularities (63% of checks made) and all of 80 irregularities were removed. The number of extraordinary checks of metering equipment which were done within the prescribed deadline of 10 days amounted to 53 (42.06%). In 2023, the number of applications for extraordinary check of meters was close to the one last year and a relatively low number of irregularities was noticed.

4.6.2.4 Call centre

Although efforts were made in order to organise data collection on this aspect of commercial quality as well, the data on call centres are still not available.

4.7 Security of natural gas supply

So as to provide long-term security of natural gas supply, it is extremely important to plan the system development adequately and this is realised by transmission system operators via the elaboration of ten-year development plans.

As transmission system operators, *Transportgas Srbija* LLC and *Yugorosgaz-transport* LLC were obliged to draft and submit ten-year transmission system development plans to the Agency for approval every year. *Gastrans* LLC is not obliged to do so, but they have to organise market test for the construction of new capacities of the upgrade of existing capacities within their gas pipeline every second year.

Transmission System Development Plans were not approved in 2023 to the transmission system operators *Transportgas Srbija* LLC and *Yugorosgaz-transport* LLC.

The initiation of the commercial operation of the gas pipeline of *Gastrans* LLC on January 1, 2021, the second supply direction became available for Serbia and this is how, the infrastructure supply standard N-1 in the Republic of Serbia was met since it increased from 33.8% to 114%. In 2023, infrastructure supply standard N-1 did not change in the Republic of Serbia.

4.7.1 Natural gas consumption forecast

In 2023, natural gas consumption in Serbia was 2.7% lower than in 2022 and 6.3% lower compared to 2021, which was the highest consumption in the last 30 years. Higher air temperatures during the winter months of 2023 contributed to reduced natural gas consumption for heating purposes, even compared to 2022, when winter temperatures were also above average. A comparison of natural gas consumption in 2023 with 2022 revealed a 2.9% decrease in district heating consumption. Household consumption decreased by 1.3%, despite a 5.6% increase in the number of delivery points. For the industry, natural gas consumption in 2023 was 2.9% lower than in 2022.

Natural gas consumption forecast in the future is uncertain since there are important elements which may both lead to the increase and to the decrease in the natural gas consumption:

- natural gas consumption in existing combined heat and power plants which will be engaged bot for the production of heat for heating purposes and for power production, depending on the energy market price trend;
- uncertain work of industrial plants which represent important natural gas consumers;
- replacement of coal-fired and oil derivatives-fired boilers with natural gas-fired boilers in state institutions or connection of state institutions to district heating companies in order to reduce air pollution;
- connection of new natural gas consumers to existing distribution networks;
- gasification dynamics in Serbia via the construction of new transmission gas pipelines and distribution networks;
- energy efficiency measures which lead to the reduction of unit energy consumption both in the industry and in residential construction;
- use of renewable energy sources for heating;
- natural gas price.

4.7.2 Projects aimed at the increase of security of supply

The underground storage Banatski Dvor with maximum withdrawal capacity amounting to 5.1 million m3/day has a positive impact on the security of natural gas supply. Out of the total volume of commercial gas from the underground storage of 450 million m3, 49% belong to PE *Srbijagas*, i.e. around 220.5 million m3 which is less than 10% of the annual natural gas consumption in Serbia. The increase of the commercial gas volume to the level of around 25% of the annual consumption which is the average level in the EU countries would increase the security of natural gas supply in Serbia considerably PE *Srbijagas* plans to increase the volume of the commercial gas within the underground storage to 750 million m^3 and the withdrawal capacity to 10 million m^3/day but he final financial decision for the launch of the expansion of the underground storage Banatski Dvor has not been made yet.

In December 2023, the construction of Gas Pipeline Niš-Dimitrovgrad-Sofia was completed which enabled the connection with the Bulgarian transmission system. The length of the gas pipeline through Serbia amounts to around 109 km and the capacity should amount to 1.8 billion m^3 annually. A grant from EU IPA funds amounting to 49.6 million € was provided for the construction of the gas pipeline section in the Republic of Serbia. The gas pipeline is expected to be operable from December 1, 2023. The trial work of the interconnector initiated in December 2023 which enables the diversification of supply sources and increases the security of supply additionally as well as the level of the infrastructure standard N-1 in the Republic of Serbia.

Connections with gas pipeline systems with other neighbouring countries can be also important for the increase in the security of supply, especially with those countries which have a more developed gas infrastructure and additional options for natural gas provision, such as Romania and Croatia.

5. CRUDE OIL, OIL DERIVATIVES, BIOFUELS, BIOLIQUIDS, COMPRESSED NATURAL GAS, LIQUIFIED NATURAL GAS AND HYDROGEN

5.1 Sector structure

The amendments to the Energy Law in 2021 and 2023 established the legal and institutional framework for the implementation of necessary activities aimed at adjustments and harmonization of the oil sector of the Republic of Serbia with the acquis communautaire of the EU in the energy field, the deficiencies of the 2014 Law were removed and the implementation of regulations became more efficient. Among other things, amendments introduced new energy activities and licences in the sector which includes production and/or trade in crude oil, oil derivatives, biofuels, bioliquids, hydrogen as well as compressed and liquefied natural gas while some existing activities, i.e. licences expanded their scope; the mandatory stock obligation was elaborated and types of oil derivatives which certain energy entities should keep were defined and thereby, preconditions were created for the upgrade of energy safety level; the jurisdiction of inspectors within inspection monitoring were defined precisely; the issue of strategic energy projects in the oil field was regulated, etc. In addition, some of the provisions of this law were harmonized with the law regulating facilities legalization, with regulations regulating planning and construction and with the law regulating sale and ports in internal water flow in the segment related to trade of fuels for watercraft.

In line with the Law, licenced energy activities in the field of oil, oil derivatives, biofuels, bioliquids, hydrogen, compressed and liquefied natural gas include:

- oil derivatives production;
- oil transport through oil pipelines;
- oil derivatives transport through product lines;
- trade in oil, oil derivatives, biofuels, bioliquids, compressed natural gas, liquified natural gas and hydrogen;
- trade in motor fuels and other types of fuels on petrol stations;
- storage of oil, oil derivatives and biofuels;
- biofuels production;
- bioliquids production;
- trade in fuels outside petrol stations;
- filling vessels for liquid petroleum gas, compressed and liquified natural gas;
- trade in fuels meant for vessels
- blending biofuels with fuels of oil origin
- blending bioliquids with fuels of oil origin and
- hydrogen production.

Oil transport via oil pipeline and oil derivatives transport via product line are the activities of general interest in line with a separate law and there is a regulated use-of-system charge while other licenced activities are performed in line with market principles.

5.1.1 Organisational and ownership structure of the oil sector

The Company for Exploration, Production, Processing, Distribution and Trade of Oil and Oil Derivatives *Naftna industrija Srbije* JSC (hereinafter: *NIS*) is the dominant oil and oil derivatives market player in Serbia. Vertically integrated company *NIS* has been on the stock exchange since 2010. After its privatisation, in the initial ownership structure, the Russian company "Gazprom neft" had 51%, while the Republic of Serbia had 49%. Out of the shares owned by the Republic of Serbia, shares were allocated to former workers and other citizens. In the years that followed, the Russian shareholder purchased shares from small shareholders and, thereby, until the beginning of 2022, the Russian shareholder held around 56% of the ownership shares. Due to emergency situation in international relations, there was a disruption in the crude oil of Russian origin supply in the European markets in 2022. "*Gazprom neft*" which used to the major shareholder in *NIS r*educed its share in the main capital of NIS from 56.15% to 50% in May 2022 and by this transaction, "*Gazprom*" company acquired 6.15% of shares of this company. The Republic of Serbia holds slightly less than 30%, while around 14% are owned by a great number of small shareholders. The modification of ownership structure created conditions for unhindered operations of *NIS* in the market in 2022 as well as in 2023. *NIS* deals in refinery processing of crude oil, owns the greatest retail network and the greatest storage capacities for all motor fuels and crude oil. The companies with the highest share in the oil and oil derivatives market include international companies *Lukoil, OMV, MOL Serbia, ECO-Serbia, Petrol*, as well as local companies *Knez Petrol*, *business system Mihajlovic*, *Europetrol, Art Petrol and Radun AVIA*. A considerable number of these companies operated in wholesale mostly with reservoirs lent from third parties, i.e. from storage owners. In contrast to this, in the field of retail, a great number of companies either fully or mainly perform their activities on petrol stations owned by them.

Joint Stock Company for Oil Transport via Oil Pipelines and Oil Derivatives Transport via Product Lines *Transnafta* Pančevo (hereafter *Transnafta*) transports oil through oil pipelines and was awarded with the licence for the performance of this activity for the second ten-year period in 2016. In 2019, status change of the that company occurred, i.e. it ceased to be a public company and it became a closed joint stock company 100% owned by the Republic of Serbia.

In the Republic of Serbia, there is no infrastructure for public transport of oil products through product lines except in those companies which use this means of transport for their own purposes.

5.2 Production and transport capacities

5.2.1 Production of oil, oil derivatives, biofuels, bioliquids and hydrogen

Production of oil derivatives also includes all other technological processes which result in standardized products with prescribed quality apart from the process of production of oil derivatives by refining crude oil, by degasification or by separation of light liquefied hydrocarbons.

Until the end of 2023, there were seven energy entities licensed for oil derivatives production: *NIS* which obtained the licence for this activity in 2016 for the second ten-year period, as well as *Standard gas* from Novi Sad, *Petrol LPG* from Belgrade, *VML* from Jakovo, *Euro gas* from Subotica *Hipol* from Odžaci and *Biogor Oil* from Sukovo. In addition, the Law defined biofuels production as a separate activity and, therefore, licenced activity – biofuels production now includes the processes of obtaining standardized motor fuels meant for vehicles, while the licenced activity – bio liquids production includes processes of obtaining standardized energy fuels of bio origin meant for heating and cooling.

The right to blend biofuels with fuels of oil origin is given to those energy entities owning specific energy facilities for homogenisation of these fluids and which were awarded with a licence for the performance of this activity. In the same way, amendments to the Law from 2021 introduced blending bioliquids with fuels of oil origin as an activity. Filling vessels with liquid oil gases which are used for energy purposes, such as propane, butane and propane-butane blend as well as filling vessels with compressed, i.e. liquifed natural gas is also an energy activity and that licence was held by 27 energy entities by the end of 2023.

The only *Best Lubricants* from Tomislavci energy entity was licenced by the end of 2023 for the performance of biofuel production and bioliquids production. *NIS* is the only entity licensed for biofuel blending with fuels of oil origin while there are no licenced energy entities for blending bioliquids with fuels of oil origin.

The adjustment of the local legal and institutional framework with the European Union acquis communautaire in the energy field was also performed by the introduction of energy activity – production of hydrogen as motor fuel which may be traded further either in terms of wholesale or retail. The Rulebook on Energy Licence and Certification envisages that hydrogen can be produced by electrolysis, reforming or pyrolysis, via the use of biogas and other renewable energy sources as well as via the use of natural gas and other fossil fuels. In such a manner, the licencing of production of green, grey and blue hydrogen was enabled, and thereby, the use of hydrogen regardless of the origin and method of production was enabled until full switch to green hydrogen production and consumption solely. No licence was issued until the end of 2023 for the performance of this activity.

In line with the Law, oil derivatives, biofuels, bioliquids, compressed natural gas, liquefied natural gas and hydrogen which are placed in the market have to comply with conditions defined by regulations on quality, regulations on environment protection, regulations on protection from fire and explosion as well as technical regulations and other regulations which refer to motor and energy fuels trade. Crude oil production, import and refinery processing in Serbia are performed exclusively by *NIS*. Oil exploitation is performed on 67 oil fields with 870 wells. In addition to these, additional 47 development wells and 4 exploratory wells were drilled in 2023.

In 2023, the total consumption of crude oil and semi-finished products from domestic production, imports, and stocks was 4.092 million tons, which is 7% less than in 2022. Serbia produced about 0.811 million tons of crude oil (21.36% of total consumption) in 2023, while 3.052 million tons (78.64% of total consumption) were supplied through imports. Unlike in 2021, when the share of Russian crude oil in total imports was 23%, and 47% in 2022, in 2023, for the first time in the history of the Serbian oil industry, there was no import of Russian crude oil. This is a result of the introduction of the sixth package of sanctions against the Russian Federation in May 2022, which included a ban on using European infrastructure for the transport and processing of Russian crude oil after December 5, 2022. These political measures led to greater diversification in the origin and types of crude oils imported in 2023, with imports coming from Azerbaijan (Azeri), Iraq (Basrah medium), Kazakhstan (CPC, KEBCO), Norway (Johan Sverdrup), Nigeria (Bonga, Bonny light), Egypt (Qarun), and Libya (Al Jurf).

Crude oil processing is performed in the oil refinery in Pančevo where modernisation began in 2009 and the first cycle of modernisation was completed in 2013 (light hydrocracking and hydro processing modules and production of motor fuels with “Euro 5” quality exclusively). In November 2020, the deep processing plant with delayed coking was commissioned. The construction of the plant began in 2018. The successful completion of this project enables NIS to

have an increased production of fuels which are highly valorised in the market – diesel, petrol and liquid oil gas as well as to start producing oil coke. In addition, energy efficiency of the refinery was improved and local oil coke started to be produced. The Deep Processing Project also created ecological benefits, first of all the cease of production of heating oil (mazoute) with a high content of sulphur. In such a manner, the quality of all produced motor and energy fuels is harmonised with the EP Directive 2016/802 which is how conditions were created for amendments in the local legislation and, in 2020, a new Rulebook on Technical Requirements and Other Requirements for Liquid Fuels of Oil Origin ("Official Gazette of RS", No. 150/20) was adopted and it included as an annex the Rulebook which is harmonised with amendments in the local legislation in 2021 and 2022 ("Official Gazette of RS", No. 127/2021 and 128/2022). In addition, the emission of sulphur and nitrogen oxides as well as powder particles were reduced largely which improves the ecological sphere additionally. In 2021, the reconstruction of the facility for catalytic cracking, i.e. FCC (Fluid Catalytic Cracking) Facility commenced as well as the construction of a new facility for high oktan petrol components high-octane petrol components (*ETBE*). Works on the reconstruction of FCC and on the construction of the ETBE facility were continued in 2022 and in 2023 too. Following the completion of works, the reconstructed FCC will have greater flexibility and optimization of technological process, i.e. a possibility of operation in petrol and polypropylene regime depending on market demand as well as it will have significant ecological benefits.

After 2020 which was affected by the crisis caused by pandemia, 2021 was a year of stabilization and, in 2022, there was a significant growth in motor fuels consumption of 7.9% in comparison to last year. In 2023, there was a slight decline in consumption of 1.1%. The decrease in the consumption of motor fuels is primarily due to the high base period from the previous year, which was influenced by increased stockpiling by end-users due to fears of potential shortages. Despite a significant 18% drop in the average Brent crude oil price compared to 2022, there was a 7% decrease in processing volume (4.092 million tons) in 2023 compared to the record year of 2022, as shown in Figure 5-1. The decline in processing was caused by changes in macroeconomic parameters, administrative export restrictions on petroleum products, and a complex situation in the import oil market.

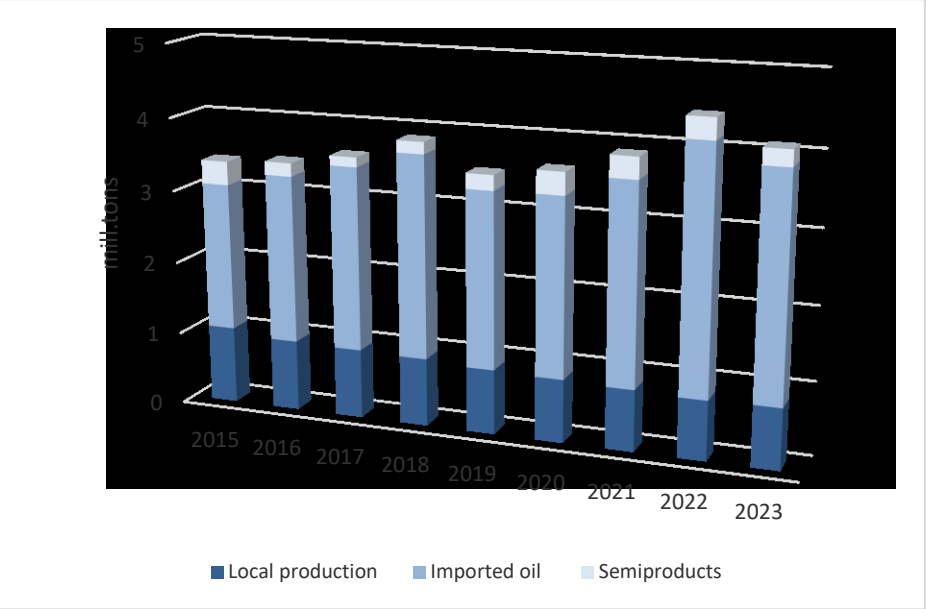

Figure 5-1: Crude oil refinery processing in Serbia in 2015 - 2023

Domestic crude oil production reached its peak in 2013. Compared to that year, crude oil production in 2023 was approximately 33% lower. However, in 2023, domestic crude oil production was about 2.1% higher than the previous year, breaking a ten-year trend of declining production. The increase in crude oil production is due to the activation of a greater number of new wells during 2023. On the other hand, crude oil and semi-finished product imports in 2023 were about 9.6% lower than the previous year. The share of domestic crude oil in total refinery processing was 18.6% in 2008, around 49.5% in 2012, and 21.36% in 2023, which is approximately 1.77% higher compared to the previous year.

In Serbia, apart from production in Pančevo refinery, oil derivatives in the specific part of production and liquid oil gases are produced in *NIS* factory for stabilization, i.e. preparation of natural gas for transport in Elemir (propane and gas condensate) as well as in the facilities of the energy entity Standard Gas and Hipol (propane as well as pentane-hexane fraction, i.e.), where imported gas condensate, a wide light hydrocarbons fraction is used as raw material.

The production of propane-butane blend and autogas, based on blending components is performed by Petrol LPG in their plant in Smederevo, by company VML in their plant in Jakovo and by company Euro gas in their plant in Subotica.

Petroleum derivatives, as end products, are obtained not only from refinery processing but also through imports and from stocks. In 2023, approximately 0.9 million tons of derivatives were imported, which is roughly the same as in 2022. In 2023, 0.559 million tons of derivatives were exported, which is a significant 14% decrease compared to the previous year. The decline in exports is, on one hand, due to the Government of the Republic of Serbia's decision on the temporary ban on the export of Euro diesel EN 590, which was in effect until the end of the first quarter of 2023. On the other hand, it is a result of reduced technological exports due to the optimization of refinery production, primarily affecting bitumen. The overall decrease in petroleum derivative exports is partially offset by a separate 27% increase in the sales of aviation fuel compared to 2022.

Retail sales of petroleum derivatives decreased by about 7% compared to 2022. The primary impact on retail sales was the reduction in the turnover of heating oil, bitumen, and primary gasoline in the domestic market, as well as the decrease in domestic motor fuel consumption.

This is the eleventh year in a row with autogas consumption drop, which is a consequence of abandonment trend of use of this alternative fuel in vehicles, due to relatively high price of this fuel in comparison to other fuels as well as due to higher costs of the issuance of certification of validity of the vehicle machinery using autogas - every five years. The use of this fuel is cost-reflective only for vehicles which are driven for a large number of kilometres annually. The consumption of compressed natural gas for running vehicles is growing but there are no precise statistical data on this. The number of public stations for supplying vehicles with compressed natural gas has increased to 41, but not all of these stations have yet been recorded in the licenses. Since no registry has a record of this, the number of internal compressors used for supplying vehicles with compressed natural gas for internal purposes is not known. Small quantities of liquefied natural gas which can be used as energy fuel or as motor fuel and for the drive of vehicles were imported in 2023. There is one vehicles supply station for this energy carrier in the Republic of Serbia.

According to the data available to the public, there are 3,022 million vehicles registered in the Republic of Serbia. 2.8 million Vehicles which use petrol, eurodiesel, LNG-autogas, compressed natural gas as drive fuel or are electricity-fuelled which represents a 4.5% growth in comparison to 2022. The total number of electricity-fuelled vehicles or hybrid-fuelled vehicles is still small which is why it does not affect the structure of the total motor fuel consumption largely but the relative increase of the number of such vehicles which are registered is big on the annual level and it amounts to around 70%. A similar conclusion is made with vehicles using compressed natural gas – the number of those vehicles which were registered increased by 32.3% in comparison to last year. The drop of the number of vehicles using autogas which were registered kept dropping by 5.1% in comparison to 2022, i.e. by 38.9% in comparison to 2016 and this is followed by resulting drop of consumption of this energy carrier for the given reasons.

Requirements in terms of quality of oil derivatives which are in the market, as well as the procedure for assessment of harmonisation of quality with the prescribed one are regulated in the Rules on Technical Requirements and Other Requirements for Liquid Fuels of Oil Origin (“Official Gazette of RS”, No. 150/20, 127/21 and 129/2022 in force until 23/11/2023 and 104/2023), i.e. in the Rules on Technical Requirements and Other Requirements for Liquid Petroleum Gas (“Official Gazette of RS”, No. 97/10, 123/12 and 63/13). These Rules also define labelling of installations used for oil derivatives trade.

The Decree on Oil Derivatives Authentication (“Official Gazette of RS”, No.51/15, 5/17 and 115/2022) closely prescribes the conditions, methods and procedure of authentication of oil derivatives which are traded within the market. Amendments to this Decree from 2022 introduced authentication of heating oil which is now among oil derivatives which have been authenticated until then such as lead-free petrol, gas oil EURO DIESEL, diesel fuel GAS OIL 0.1 and liquid oil gas.

5.2.2 Oil and oil derivatives transport

Oil is transported mainly through the oil pipeline between the Adriatic Sea port Omisalj through Sotin in the Republic of Croatia. The connection point of the pipeline in Serbia is in Bačko Novo Selo on the River Danube and it goes to the refinery in Pančevo through Novi Sad. Oil pipeline from Omišalj to Pančevo was commissioned as a unique functional whole in 1979. A part of it in the Republic of Croatia is operated by the company Janaf, while a part of it in the Republic of Serbia is operated by Transnafta. In addition to the branch Backo Novo Selo-Novi Sad with nominal transport capacity of 9 million tons annually and the branch Novi Sad- Pančevo with nominal transport capacity of 6 million tons of crude oil annually. Novi Sad terminal is also an integral part of this system, equipped with the pump and metering station and with technological tanks which are used as crude oil storage, primarily with a purpose of storing mandatory reserves.

Transnafta is the company licensed for oil transport through oil pipelines which is a regulated energy activity. A smaller scale of imported crude oil is transported by barges by the River Danube, while the local oil is also transported by road tankers from the exploitation fields to oil refineries (these types of transport are not licensed energy activities).

Since 2005, when PE *Transnafta* was established, until the end of 2023, around 53 million tons of oil was transported in total. Transport of imported oil was lower during the period of the first refinery modernisation cycle in 2011 and 2012. In 2023, 0.762 million tons of local oil and 3.042 million tons of imported oil were transported. It represents a

growth of local oil transport of 4.76% and a decrease of imported oil transport by 8.43% in comparison to last year. In the past ten years, the highest local oil transport was recorded in 2013 when it was by around 30% higher than in 2023. The lowest imported oil transport was recorded in 2012 when it was by around 62% lower than in 2023.

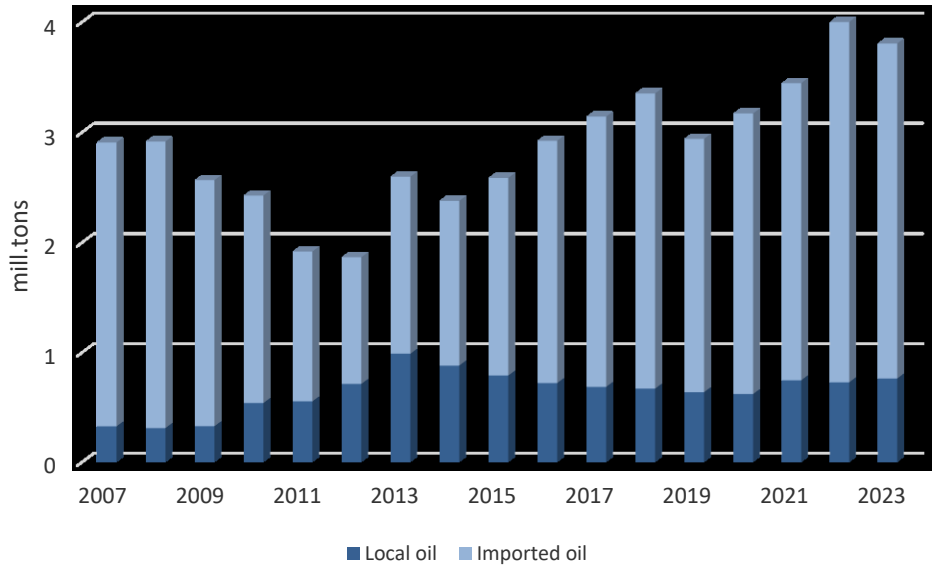

Figure 5-2: Crude oil quantities transported by oil pipeline of "Transnafta" in the period 2007 – 2023

Around 6% less crude oil was transported in 2023 than last year which is primarily a consequence of lower volumes of processed crude oil which is primarily a consequence of lower-scale crude oil processing due to decreased consumption of motor fuels and decreased oil derivatives export in comparison to last year as well as to the reduction of stocks of final customers made during 2022 made due to uncertainties caused by energy crisis. If one reviews the time period since regulation was introduced for this activity (Figure 5-2), one may notices that in comparison to 2012 when there was the lowest transport of crude oil via oil pipeline, crude oil transport in 2023 was higher by around 104%.

5.3 Regulation of energy entity for transport of oil and oil derivatives

5.3.1 Unbundling of energy entity for transport of oil and oil derivatives

Transport of oil via oil pipelines as regulated activity of general interest is performed by *Transnafta* at regulated prices and under prescribed and publicly announced conditions in line with principles of non-discrimination, separately from other energy-related and non-energy-related activities.

Legal unbundling is not legally binding in case of pipeline transport of oil. In case of *Transnafta*, there was unbundling in terms of accounting between crude oil transport and other activities for which this energy entity is licensed (activity -trade in oil, oil derivatives, biofuels, bioliquids, compressed natural gas, liquefied natural gas and hydrogen and activity – storing oil, oil derivatives and biofuels).

5.3.2 Access to the system for oil and oil derivatives transport

The access to the system for oil pipeline transport is prescribed by the Law. The rights and obligations of the entity performing oil transport via oil pipeline as well as the rights and obligations of system users are regulated in more detail by the Oil Transport Network Code. The same code also prescribed physical-chemical characteristics of crude oil which may be transported via pipeline system, technical conditions for safe system functioning; payment security instruments, rules of procedure in case of emergency; metering method, functional requests and meter accuracy classes. In 2010, with the approval of the Agency, *Transnafta* adopted Oil Transport Network Code for the first time. Due to the change of the legal form of *Transnafta* which transformed from the public entity into joint stock company, to amendments to the Energy Law as well as to regulations in the field of pipeline transport, environment protection, fire protection, meteology and other regulations regulating this field, with the approval of the Agency, *Transnafta* adopted an amended version (ver.2.0) of the Code which entered into force on 20/05/2023 but its enforcement was postponed until 01/01/2024. Since there are still no product lines publicly used, the conditions were not created for the adoption of the relevant code.

In line with the Law, energy entities performing oil transport via oil pipelines or oil derivatives transport via product lines are obliged to set the dynamics of construction of new transport capacities and of reconstruction of existing ones, the sources of funds and other conditions for the development of the system for oil transport via oil pipelines within the development plan. In addition, they should set the programmes and measures for the reduction of losses within this system and they are responsible for the realization of the development plan. The Agency approves the development plan of the system for transport of oil via oil pipelines and oil derivatives via product lines. In October 2023, *Transnafta* prepared a draft Development Plan for the oil transportation system via pipeline for the period 2024-2028, which was agreed upon with the Agency, but an official request for approval has not yet been submitted.

5.3.3 Use-of-system charge

In 2023, the oil transport use-of-system charge of *Transnafta* JSC did not change.

Table 5-1: Use-of-system charges

Transnafta	**Oil pipeline branch**	**31/12/2022**	**31/12/2023**
Tariff "energy source" (RSD/t/100 km)	Sotin – Novi Sad	149.69	149.69
	Novi Sad – Pančevo	125.11	125.11

The current charges and chronological review of oil pipeline use-of-system charges are available on the website of the Agency (www.aers.rs).

5.4 Oil, oil derivatives, biofuels, bioliquids, compressed natural gas, liquefied natural gas and hydrogen market

Energy trading activities in the field of oil derivatives and biofuels were primarily regulated by the regulations in the field of trade and in the field of energy. Apart from traditional trade in motor fuels and other fuels on petrol stations, the Energy Law recognises trade in fuels out of petrol station as retail in fuels, i.e. fuels which are not used for vehicles, except for sport planes. In such a way, the supply of sport planes with jet fuels and direct supply of final customers with fuels for heating and cooling, such as heating oil, heating bio oil, propane, butane, propane butane blend, hydrogen, etc. is also defined as retail trade. The same regulations regulate the trade in oil, oil derivatives, biofuels, bioliquids, compressed natural gas, liquefied natural gas and hydrogen as a traditional wholesale activity which, in case of some fuels, except for general qualitative conditions prescribed, also has quantifying conditions defined, i.e. certain storage capacities which are used in order to trade in these fuels. Energy entities holding his licence are entitled to perform trade on the local and foreign level and they complied with minimum technical conditions for this. The trade in fuels meant for vessels is defined as specific wholesale category and it is regulated also by regulations in the field of fire protection as well as in the field of trade. The status of an energy entity which performs this activity can be awarded to companies which were awarded with the status of an operator of port activities exclusively in line with the regulations which regulate port activities and sale in national waters (considerable amendments to the Law on Sale and Ports in National Waters entered into force in 2018 while additional amendments were also made in 2019, 2020 and 2021). Thereby, the supply of big ships for local cruise and technical vessels in ports and water flows in the Republic of Serbia was regulated by the law.

In the regulations in the field of trade, the storage of oil, oil derivatives and biofuels are not recognised as trade services, but they are still licensed activities. Energy entities holding this licence are entitled to offer the service of storing fuels owned by traders, final customers, the Energy Reserves Authority – appointed to establish mandatory oil and oil derivatives reserves. They store fuels in adequate tanks.

The Law defines the competences of the energy inspector who, among other things, has a task to check if energy entities which perform energy activities comply with prescribed conditions for the performance of these activities upon the award of the licence, i.e. the inspector has a task to monitor energy activities performance in line with the Law and to monitor facilities for oil, oil derivatives and biofuels storage and consumption. Energy inspection was established and started working in mid-2021.

There is free import of oil derivatives, biofuels and bioliquids and the volume, as well as the necessary structure of storage capacities for each of oil derivatives and biofuels type which are imported or traded within the Serbian market by traders are defined by regulations which arise from the law regulating trade (Rulebook on Minimum Technical Conditions for Oil Derivatives and Biofuels Trade ("Official Gazette of RS", No. 68/13 and 81/15). These regulations also regulate minimum technical conditions for the trade in motor fuels and other fuels on petrol stations (stations for the supply of vehicles, trade in fuels meant for vessels and trade in fuels out of petrol stations).

There is full liberalisation of all energy activities in Serbia but due to the emergency situation in international relations starting from 2022, the Government of the Republic of Serbia adopted a set of measures by which they led to the mitigation of the impact of price growth in the global market and, at the same time, although there was an increased

demand, they provided for full supply of the local market with oil derivatives at acceptable prices. One of the first measure which was implemented by the Government based on regulation regulating the trade was the adoption of a Decree on Oil Derivatives Price Limit which regulated the method of establishment of retail oil derivatives price for Euro diesel and Euro Premium BMB 95 except for registered agricultural households for which a fixed price is established. Retail prices of the given derivatives are related to average wholesale prices. A fixed margin is established in correlation with the wholesale price and the dynamics of retail price modification is established. In most cases, the Decree was being modified for a period of one month time. Therefore, there were more amendments due to the extension of the validity period. New Decrees were adopted after the termination of a six-month period due to its harmonisation with the Law on Trade. Thereby, retail price limit was extended during the whole 2023. Fixed fee for the highest retail price in comparison to the average wholesale price was amended only once in Febraury from RSD 9 to 13. In 2023, in line with the Decree on Oil Derivatives Price Limit, the ministry in charge of energy issues adopted the Rulebook on Calculation of Average Wholesale Oil Derivatives Price – Euro diesel and Euro premium BMB 95 (“Off.Gazette of RS”, No. 17/2023, 64/2023) twice. This act established average wholesale price of the given oil derivatives on defined parity with calculated all dependant costs.

Another measure implemented by the Government was the adoption of a Decision on Temporary Reduction of the Level of Excise Duty for Oil Derivatives from Article 9, paragraph 1, item 1),2) and 3) of the Law on Excise Duty (“Off. Gazette of RS”, No. 33/2022') as of 11/03/2022. Due to the growth of the crude oil price in the global market which has a negative effect on the macroeconomic stability of the country, the Government reduced the level of excise duties for petrols and gas oils temporarily by this decision. The Decision was amended during 2023 as well in order to extend the duration of its validity period, i.e. it was replaced by a new one when the level of excise duty was changed. The latest amendment to the Decision was published in the "Official Gazette of RS, No. 25/2023" and was valid until April 30, 2023. To increase budget revenues, while simultaneously enhancing reliefs for economic entities entitled to excise tax refunds and introducing refunds in the field of agricultural production, the Law on Amendments and Supplements to the Excise Law ("Official Gazette of RS, No. 75/2023") was adopted in October 2023. The amendments related to the introduction of refunds in the field of agricultural production will apply from January 1, 2024.

Due to emergency situation in international relations, along with the measures related to the pricing policy, based on regulations regulating foreign trade operation, in order to provide security of energy supply, the Government also adopted measures of limitation of Euro diesel and natural gas export. The decision on temporary prohibition of export of Euro diesel EN 590 which was later also applied to heating oil several times was amended in 2022 and in 2023 and it was in force until 31/03/2023 when it was annulled by the Decision published in the Official Gazette of RS, No. 15/2023. In the second half of 2022, there was a significant growth of the export of compressed natural gas from the Republic of Serbia to neighbouring markets which is why the Government adopted a Decision on Temporary Prohibition of Export and Flow out of Natural Gas (“Official Gazette of RS”, No. 115/2022) which bans the export of natural gas in gaseous, compressed and liquefied form except on the market of the Republic of North Macedonia. This Decision wa in force until 28/02/2023 (“Official Gazette of RS”, No. 6/2023).

The development of oil and oil derivatives market was greatly influenced by the new Law on Commodity Reserves (“Official Gazette of RS”, No. 104/13, 145/14 and 95/2018) and enabled the implementation of the Directive 2009/119/EP in the local legislation. This Directive refers to the provision of minimum mandatory oil and oil derivatives reserves. Based on this Law, the Government of the Republic of Serbia adopted a Decree on Setting Programme of Measures in Case of Endangered Security of Energy and Energy Sources Supply – Crisis Plan (“Official Gazette of RS”, No. 63/2019). Crisis Plan includes procedures and criteria for the definition of disturbances in the supply and procedures for normalization of market supply in the Republic of Serbia. The Programme defines the proceedings in case a decision on the release of mandatory reserves into the market is adopted on the international level. In mid-2021, the Government adopted a Decree on Amendments to Decree on Plan and Criteria for Establishment of Mandatory Oil and Oil Derivatives Stock (“Official Gazette of RS”, No. 48/2021) which defines that crude oil is purchased for the purpose of mandatory stock with the quality with parameters complying with conditions set by Rules on Operation of System for Oil Transport via Oil Pipeline which is adopted by Transnafta and approved by the Agency. The Decree also defines that mandatory stock may be refilled by replacement, sale and procurement. A Rulebook on Establishment of Annual Programme for Mandatory Oil Stock Establishment and Keeping used to be adopted for each year starting from 2015. The Rulebook on the Establishment of Annual Programme for Establishment and Keeping Mandatory Stock of Oil and Oil Derivatives for 2023 was published in the Official Gazette of RS, No. 69/2023.

The Directive (EP) 2009/28, i.e. (EP) 2018/2001 which refers to renewable energy sources aiming at the reduction of greenhouse gases, in its segment related to the mandatory content of biofuels in motor fuels were implemented in the local legislation as of 2019 since the following documents were adopted: Decree on Biofuel Market Share (“Official Gazette of RS”, No. 71/2019) and Rulebook on Technical and Other Requirements for Biofuels and Bioliquids (“Official Gazette of RS”, No. 73/2019). A Rulebook on Calculation of Renewable Energy Sources Share (“Official Gazette of RS”, No. 37/2020) was adopted in 2020. Among other things, the Rulebook prescribes in more detail the energy content of fuel in transport sector and the manner of calculation of the impact of biofuels and bioliquids and their comparable fossil fuels on the emission of greenhouse gases. By the Action Plan for Construction of New Renewable Energy Sources – Based Capacities, the obligation to reach 10% of biofuels share in motor fuels until 2020 was assumed but the biofuel share in the oil derivatives market in 2023 was still negligible. The Law on Use of Renewable

Energy Sources (“Official Gazette of RS”, No. 40/21) was adopted in 2021. Among other things, the Law transposed certain provisions from the existing Energy Law which regulate the use of biofuels and expanded them. At the same time, the Law envisaged the adoption of relevant bylaws which will regulate this area in more detail. In 2023, the Regulation on Sustainability Criteria for Biofuels, Bioliquids, and Biomass Fuels ("Official Gazette of RS" No. 96/2023) and the Rulebook on the Calculation of the Share of Renewable Energy Sources ("Official Gazette of RS" No. 2/2023) were adopted. Among other things, these regulations specify the energy content of fuels in transportation and the method for calculating the impact of biofuels, bioliquids, and their comparable fossil fuels on greenhouse gas emissions.

In 2023, the Rulebook on Immobile Tanks (“Official Gazette of RS”, No. 50/2019 and 85/2023) was amended and it, among other things, sets technical requirements and method of labelling of these facilities, equipment characteristics and the compliance with these requirements as well as the conditions for immobile tanks verification.

5.4.1 Wholesale market

Until and including 2023, the licence for trade in oil, oil derivatives, biofuels, bioliquids, compressed natural gas, liquefied natural gas and hydrogen was held by 63 energy entities, i.e. 5% more than last year as it is indicated in figure 5-3. In the period after 2014, the main reasons for the reduction of the number of licenced energy entities for this energy were stricter regulations in the field of trade which regulate the minimum technical requirements for this activity in 2011 and in 2013, as well as the full implementation of these regulations in 2014, when licenses were withdrawn most often for these reasons upon the proposal of market inspectors. In the second phase which includes 2015 and 2016, there was a follow-up of slight annual trend of reduction of number of licenced entities for trade and then there was a slight growth from 2017 until 2023 which is a result of natural fluctuation of the number of wholesale traders present in the oil, oil derivatives, biofuels, bioliquids, compressed natural gas, liquefied natural gas and hydrogen market under set conditions. Since 2015, the number of market participants is relatively stable. In the period from the adoption of the previous Energy Law in 2014, after the adoption of the amendments to Law in 2021 and in 2023, 212 licences for the performance of this activity were permanently revoked which is a relevant indicator of market consolidation. The reduction of the number of wholesalers facilitates monitoring and control both of market players and of quality of motor and energy fuels which are placed on that market.

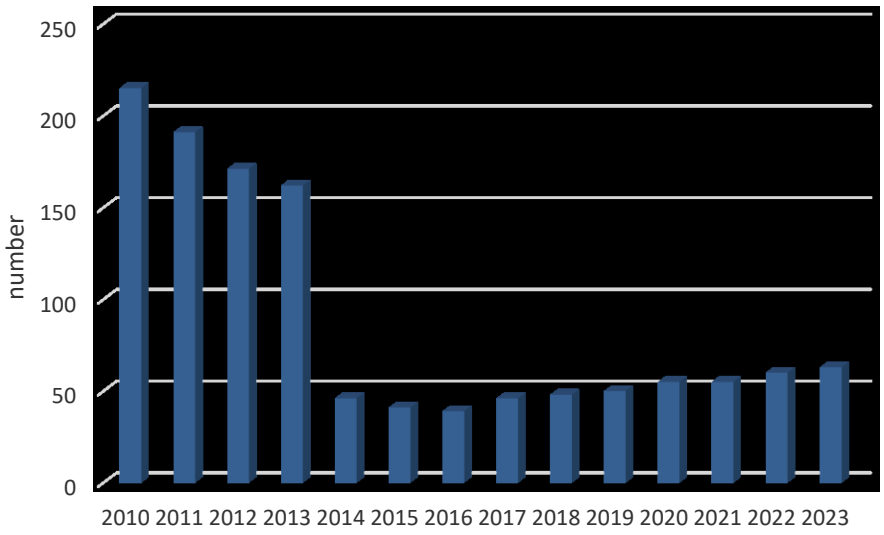

Figure 5-3: Number of active licenses for trade in oil, oil derivatives, biofuels, bioliquids, CNG, LNG and hydrogen in 2010-2023

In 2023, 63 energy entities held a licence for trade in oil, oil derivatives, biofuels, bioliquids, compressed natural gas, liquefied natural gas and hydrogen. Table 5-2 indicates the number of energy entities hold a licence for wholsale in different energy sources in 2023.

Table 5-2: Number of energy entities holding licence for different energy sources in 2023

Type of energy source	Number of energy entities	Type of energy source	Number of energy entities
Crude oil	2	Lead-free motor fuels (*BMB*)	6
LNG - autogas	10	Airplane fuels	1
LPG – propan-butan blend (*PBS*)	6	Jet fuels	1
LPG - propan	6	Gas oil Euro diesel	20
LPG - butan	3	Gas oil extra light Euro EL	5
Compressed natural gas (CNG)	23	Heating oils	20
Liquefied natural gas (LNG)	4	Biofuels	0
Hydrogen	0	Bioliquids	0

From the data given in the table, one may conclude that the biggest competitiveness potential in the trade in the local market is in the wholesale in compressed natural gas, heating oils and gas oils. There is also a solid competitiveness potential in the trade in liquid oil gases and lead-free motor petrols. In addition, it is indicated that biofuels, bioliquids, hydrogen, airplane fuels and jet fuels market practically did not exist in Serbia in 2023. For the trade in motor fuel gas oil 0.1 which is used for running machines and tractors, prescribed minimum technical conditions were only complied by NIS for years in the past. At the end of 2020, upon NIS request the licence was amended and from that moment no energy entity complies with necessary requirements for the wholesale of this type of motor fuel in the market of the Republic of Serbia.

The Law on Sail and Ports within Local Waters ("Official Gazette of RS", No. 73/10, 121/12, 18/15, 96/15 – other law, 92/16, 104/16 – other law, 41/18, 95/18 – other law and 37/19 – other law, 9/2020 and 52/2021) envisages that shippers, port operators and Directorate for Water Flows should harmonise their activities with the provisions of that Law until December 31, 2018 at the latest. Until the end of 2022, most companies storing oil derivatives in tanks within river terminals harmonised their activities with ruling regulations in an adequate manner. The licence for trade in oil for watercrafts was held by the company *Siber Invest* from Požarevac and by *NIS*. *NIS* has bunker stations in Prahovo and in Veliko Gradište on the River Danube where *Siber Invest* also has a station for vessels fuel supply.

The number of energy entities licensed for the storage of oil, oil derivatives and biofuels amounted to 24 until 2021 and including 2023. *NIS* has the largest storage capacities out of 29 licence holders. The second, third and fourth largest storage holders include *Transnafta*, PE *EPS*, Mitan oil, *MOL Serbia*, *Naftachem, VML Energy* and *EURO KB RENT*.

5.4.2 Retail market

The amendments to the Energy Law in 2021 and in 2023 implied that apart from oil derivatives, the fuels such as biofuels, gas oils, vessel fuels, compressed natural gas, liquefied natural gas and hydrogen are considered to be motor fuels. The sale of heating oils on petrol stations is forbidden as of early 2015. The Rulebook on technical norms for the security against fire and explosion in fuel stations for vehicles, small watercrafts, small agricultural and sport planes ("Official Gazette of RS", No. 54/2017, 34/2019 and 92/2021) defined technical norms for safe instalment as well as for the security against fire and explosion for the construction of new facilities and for upgrade, adaptation, reconstruction and sanation of existing stations for the supply in fuels of vehicles, in road transportation, small watercrafts, small agricultural and sports planes. It also defined procedures and technical norms for devices, installation and equipment for safe fuel storing and cross-feed on these stations. There were 370 energy entities licensed for retail by the end of 2011. The highest number of them was recorded at the end of 2016 – 470 of them, while there were 422 of them holding that licence at the end of 2023 which is 8 licences less than in 2022. The increase in the number entities licensed for the performance of this activity in the period 2011 - 2016 is to a small extent the result of construction of new petrol stations as well as to sporadic transformation of internal stations into public stations, and to a larger extent due to follow-up of a several-year trend of the lease of a greater number of petrol stations from *NIS* and Lukoil system to leaseholders. Thereby, the number of market players was increased by using practically the same number of petrol stations, i.e. slightly higher number of petrol stations, as well as due to intensified activities of the ministry's control department which is authorized for trade. As a result of an intensified inspection, most of participants in this market applied for the license, even those who used to operate illegally. On the other hand, the dominant reason affecting the reduction of the number of participants in retail market is the revocation of licences from companies performing this activity on one station or on a small number of stations for vehicle supply upon their request due to lack of cost-effectiveness. Following the change of legal basis of their use, in most cases,

energy entities performing this activity on a larger number of stations continued performing this activity on these stations. Therefore, operational cost optimization is the cause of market consolidation. It is confirmed by the fact that the number of licenced entities dropped by around 4% in the period 2016-2021. A considerable reduction of the number of licenced energy entities in 2022 by 4.7% and in 2023 by additional 1.9% is a consequence of the introduction of maximum retail prices of oil derivatives due to the energy crisis which resulted in the reduction of fixed margins in this area which is why a number of small-scale traders withdrew from the market, primarily those traders who leased petrol stations.

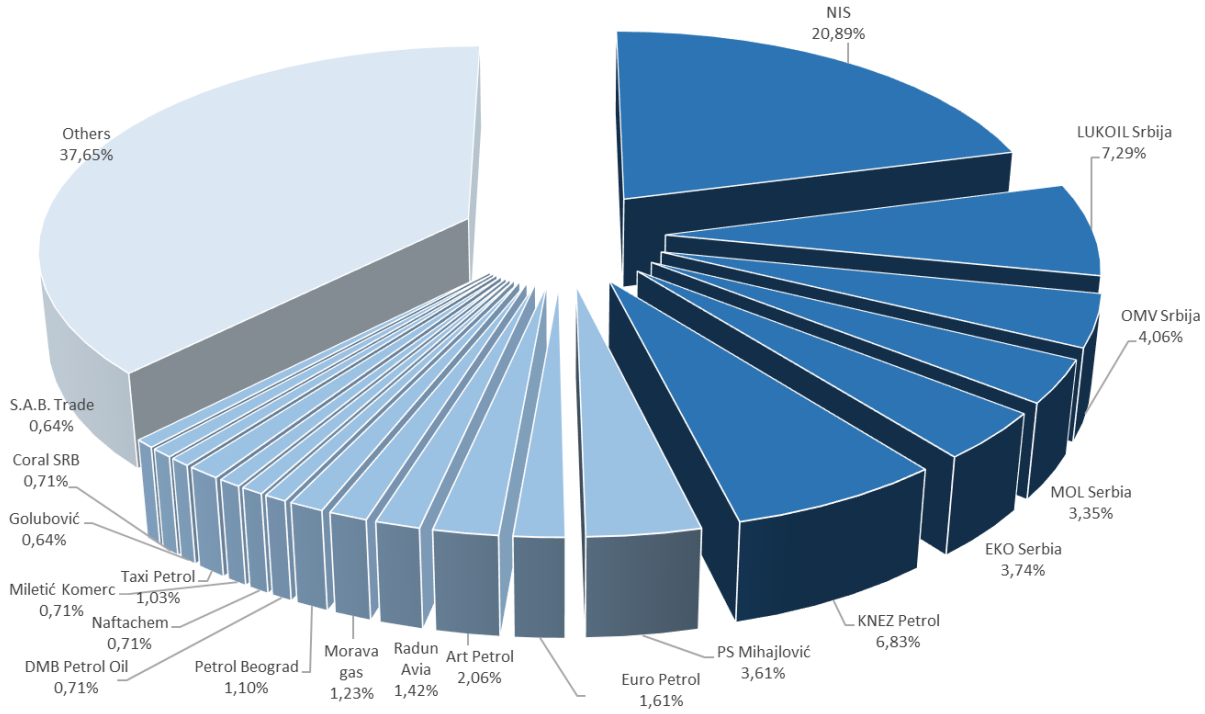

Figure 5-4: Share of companies in retail motor fuel market according to the number of stations in 2023

Figure 5-4 indicates the share of the biggest companies in retail motor fuel market in 2023. The given data do not refer to the motor fuel quantities placed on the market of the Republic of Serbia but to the relative share that oil companies hold in the market according to the number of petrol stations they use either as owners or as tenants, excluding the stations of other licenced entities using franchise trademark of these companies. In addition, the diagram has incorporated brands operating within the same business group (e.g. stations operating under brand NIS Petrol and Gazprom are incorporated in NIS section etc.) while the section “Other” includes all companies operating with than ten stations. Average number of stations per energy entity in the Republic of Serbia amounts to 3.6. However, if we exclude business group NIS performing this activity on more than 300 stations from the statistical data, this factor drops to 2.9. If we also exclude Lukoil and Knez Petrol using more than 100 stations each, the average level drops to 2.4. In the end, if we exclude all 19 energy entities which operate with ten and more than ten stations from the analysis as it is indicated in Figure 5-4, the average number of stations per energy entity amounts to 1.44. This average refers to 96.21% of all licensed energy entities engaged in the trade of motor fuels at approximately 37.65% of the 1,530 public retail outlets in the Republic of Serbia in 2023. These traders are shown in Figure 5-4 in the aggregate category "Others," and their share of the total number of stations decreased by about 1.5% in 2022 and an additional 1.84% in 2023, confirming the thesis of consolidation in the domestic market. The largest increase in the number of stations operating in 2023 was observed for MOL Serbia (4), Knez Petrol (4), and Art Petrol (3), with the first two companies also experiencing the highest growth in 2022. The most significant decrease in the number of stations was recorded by PS Mihajlović (6), which had the largest decline in 2022 as well. The total number of stations engaged in the trade of motor and other fuels nominally decreased by 11 in 2022 and by an additional 25 stations in 2023. The overall decline in the number of energy entities by 29 and the reduction in the number of active fuel supply stations for motor vehicles by 36 in the same period is partly due to the implementation of regulations that limit retail prices of derivatives and fixed margins, introduced to mitigate the effects of the global energy crisis.

The increase in the number of compressed natural gas (CNG) traders as well as of the number of petrol stations is an indicator of expansion of use of this energy source which substitutes other types of motor fuels. Until 2023 and including 2023, 18 licences were issued for retail in CNG, which is two more than at the end of last year and thereby the supply in CNG was performed on 26 stations in total which were registered in these licences which is 4 more than

last year. The supply of motor vehicles by CNG was performed in three ways: from the transmission or distribution gas pipeline network, from mobile storages or from liquefied natural gas. The retail market for this energy source is characterized by a lack of regulations and defined inspector authorities, as well as the inability to monitor the consumption of CNG as a motor fuel (part of the CNG sold at stations is used for industrial purposes). In 2022, the first license for the retail trade of liquefied natural gas at a transport refueling station was issued. The Law on Amendments and Supplements to the Excise Law ("Official Gazette of RS, No. 75/2023") stipulates the introduction of an excise duty on natural gas for end consumption used as fuel for motor vehicles starting from January 1, 2025.

There are six energy entities licensed for trade in fuels outside petrol stations as it was the case last two years and they deal in trade in gaseous energy fuels primarily. They also trade in gas oil extra light type Euro EL.

There is still no energy entity dealing in the trade in motor fuels for sport airplanes and trade in hydrogen for motor vehicles supply.

6. ACTIVITIES OF GENERAL INTEREST AND CUSTOMERS PROTECTION

6.1 Activities of general interest

Legal framework for the performance of activities of general interest, i.e. for the provision of public service in the energy sector of Serbia is set by two laws: Energy Law and Law on Public Enterprises.

The Law on Public Enterprises ("Official Gazette of RS" No, 15/2016 and 88/2019) regulates the activities of general interest in several branches of economy, energy being one of them. On the other hand, definition of an activity of general interest in the energy field and the supply of electricity (guaranteed supply) and natural gas (public supply) is regulated by the Energy Law. Electricity production is not an activity of general interest. Guaranteed electricity supply is not a specific activity, but a public service offered by a supplier appointed by the Government of the Republic of Serbia in line with the Energy Law. The Law on Public Enterprises defines that an activity of general interest can be performed by a public enterprise. It can also be performed by corporations with a public enterprise, Republic of Serbia, autonomous province or local self-government unit as the only owner. A daughter company with such corporation as the only owner of it may also perform these activities. In addition, in line with specific laws, these activities may be performed by other corporations or entrepreneurs appointed by the competent body.

The main objective of the establishment and operation of public enterprises is to secure continuous performance and development in performance of activities of general interest and regular compliance with the demand of customers in terms of products and services, secure technical and economic harmonisation of the system and its harmonisation of its development, with adequate profit and gaining any other interest prescribed by the law.

The 2014 Energy Law defines 29 energy activities with 26 energy activities including 8 of them defined as the activities of general interest for which the Agency issues licences. In the field of electricity, they include the following: electricity transmission and transmission system operation, electricity distribution and distribution system operation. In the field of natural gas, they include: natural gas transmission and transmission system operation, natural gas storage and natural gas storage operation, natural gas distribution and distribution system operation and natural gas public supply. In the oil field, they include: oil transport by oil pipelines and oil derivatives transport by product lines.

Via the adoption of the Law on Amendments to the Energy Law ("Official Gazette of RS", No. 40/21) from April 2021, the scope of energy activities was expanded to energy activities – wholesale natural gas supply, electricity storage and hydrogen production while the title of the existing activity – trade in oil, oil derivatives, biofuels and compressed natural gas was modified, i.e. this activity was expanded and it also encompasses trade in liquefied natural gas, bioliquids and hydrogen. The given amendments to the Law, 33 energy activities were defined in the energy sector in 2021. Out of them, there are 29 energy activities for which the Agency issues licences including 8 of them which are activities of general interest.

On November 1, 2023, the Law on Amendments and Supplements to the Energy Law ("Official Gazette of RS", No. 62/23) came into effect. This law established the Republic Commission for Energy Networks as an autonomous and independent body of the Republic of Serbia, responsible for the oversight of the electricity transmission system operator and the natural gas transmission system operator, both of which are owned by the Republic of Serbia. The Commission oversees the transmission and management of the electricity transmission system and the transportation and management of the natural gas transmission system as activities of general interest. With the enactment of this law, the ministry responsible for economic affairs ceased to perform state administration tasks related to the supervision and preparation of proposals for the appointment and dismissal of management bodies and capital representatives in these enterprises.

6.2 Customer protection

The protection of electricity and natural gas customers who use the services of general economic interest in provided more generally by the Law on Customer Protection ("Official Gazette of RS", No. 88/2021) which provides protection of customers who are natural persons. In more detail, the protection of all customers is also provided by the Energy Law and bylaws adopted on the basis of this Law which regulate in more detail: general conditions for electricity and natural gas delivery and supply, regulation of price of electricity transmission and distribution, natural gas transmission and distribution and price of regulated supply of households and small customers (guaranteed electricity supply and public natural gas supply), as well as the provision of administration-legal protection of customers with administrative procedures related to the connection of facilities to the system and administrative procedure related to the approval of access to the system.

Monitoring enforcement of documents adopted by the Agency

In line with the jurisdiction set by the Energy Law, in 2023, the Agency estimated the regularity of enforcement of methodologies adopted by the Agency and the regularity of setting regulated use-of-system charges and regulated electricity and natural gas prices. It is a precondition for the Agency approval of a legal act on use-of-system charges and legal acts on prices of guaranteed and public supply. When giving approval, the Agency provided for the adoption of prices set by energy entities in line with the Energy Law within the timeframe prescribed by the law regulating customer protection and the Energy Law. Except for the implementation of general mechanisms for final customers

protection, the Agency analysed the regularity of implementation of prescribed tariffs and acted upon complaints of customers and system users. In their files submitted to the Agency, they denied the regularity of stating prescribed tariffs or their amount indicated in suppliers' or system operators' bills, denied also the regularity of classifying customers in groups and categories of customers prescribed by methodologies adopted by the Agency, etc.

6.2.1 Regulation of price of supply of households and small-scale customers

One of the measures of protection of households and small-scale customers in electricity and natural gas markets is set by the Energy Law, i.e. the supplier to whom such final customers may return (universal service) is provided and the price of such supply is regulated. Electricity and natural gas market in the Republic of Serbia was opened in several stages and only households and small electricity and natural gas customers are entitled to regulated guaranteed/public supply as of 01/01/2015. Guaranteed/public supplier is appointed by the Government of RS in a manner, within a procedure and within deadlines set by the Law.

PE *EPS* is the guaranteed electricity supplier for the whole territory of Serbia. By mid-2016, guaranteed supply was provided by "*EPS Snabdevanje*" LLC Belgrade as a daughter company established by PE *EPS* in March 2013. In June 2015, by the change of status, the company was merged with PE *EPS*. From that moment, PE *EPS* continues supplying households and small-scale customers at regulated prices. PE *EPS* has rights and obligations of the guaranteed supplier until a guaranteed supplier is appointed by the Government of the Republic of Serbia. The change of status was registered on June 1, 2016 in the Registry of economic entities.

In 2020, natural gas public supply was performed by 31 public supplier out of 32 licenced energy entities (one energy entity holds a licence but does not perform the activity). Each of them is on the territory of the natural gas distribution company which it constitutes the same legal person (natural gas distribution companies have less than 100,000 customers each). In the second half of 2012, the statute of PE *Srbijagas* was amended and a contract on the transfer of activity of natural gas public supply was signed with several companies and enterprises. This enabled the Government of RS to appoint energy entities which may perform this activity. In total, 33 energy entities complied with the conditions at the end of 2012 and in early 2013 and were licensed by the agency for the performance of natural gas public supply. However, in 2018, this number reduced to 32 public suppliers due to a merger of two energy entities. The number of public suppliers in natural gas remained the same in 2023 as well.

The prices of guaranteed and public supply are approved by the Agency in line with the Law. The content of the bill issued to final customers is prescribed in more detail by bylaws by which the Government of RS prescribed in more detail conditions of electricity, i.e. natural gas delivery and supply.

6.2.2 Rights of final customer to access to data on one's own consumption

Following market opening, a final electricity and natural gas consumer becomes interested in obtaining full data on their consumption since without these data a potential supplier with whom a customer negotiates cannot make a precise price offer. In line with the Law, a final customer is entitled to ask directly or to authorize their potential supplier to ask for and obtain all necessary data from the system operator on customer's consumption on the delivery point which the system operator is obliged to indicate in an unambiguous and timely manner. The Law prescribes that a customer may authorize any supplier (not only the current one) to ask for and obtain the data on their consumption from the operator.

The decision on the procedure for the exercise of the right of final customer to have access to the data on one's own electricity and natural gas consumption was adopted by the Agency in July 2016 in line with its jurisdiction arising from the Energy Law. A part of this decision includes the templates for indicating data on a final customer's consumption so as interested suppliers could have the same data indicated and in the same way, too.

The operator is obliged to indicate the requested data free of charge within the defined deadline using the same template, in line with the defined template and submit them to the customer and a potential supplier if the customer appoints him as a data addressee. Final customers are thus enabled to receive comparable offers from potential suppliers which are established on the basis of reliable data on the customer's consumption in the long-run (for the last 24 months). The types of data are standardized as well as their template.

This procedure is expected to be more efficient after broader implementation of advanced metering systems. Direct access to the data will be available with relevant codes for authorized persons. This is already in function with the electricity Transmission System Operator.

6.2.3 Supplier switch

The Rules on Supplier Switching ("Official Gazette of RS", No. 65/15) which were adopted in 2015 regulate conditions and procedure for supplier switching in case a final customer has a contract on full supply concluded. Acting upon complaints filed with this Agency during 2016 and 2017 directly by customers who failed to switch supplier or filed via a new supplier, the Agency asked for declarations and gave instructions in order to provide for regular implementation of these rules in each concrete case. In 2016, the Agency organized consultations with energy entities twice and based on the results of these consultations, the Agency prepared amendments to the Rules which entered into force in early 2017. In line with the jurisdiction set by the Law, the Agency also drafted templates with instructions both for

customers on how to launch the procedure and for other participants in order to provide regular implementation of the Rules and more efficient procedure realization. New amendments of these Rules enabled the launch and completion of the supplier switching procedure upon a request of a customer losing their supplier even in less than 21 day. Thereby, procedure participants are urged to act urgently in settling a certain number of cases in order to reduce the number of customers who would otherwise be exposed to higher costs of supply of the last resort which is limited to 60 days at most. The adoption of a Decision on Amendments to Rules on Supplier Switching ("Official Gazette of RS", No. 10/17) enabled considerable progress in registration and organization of data bases of system operators on final customers metering points.

6.2.4 General terms and quality of delivery and supply

The Decree for Conditions of Electricity Delivery and Supply ("Official Gazette of RS", No. 84/23) and the Decree on Conditions for Natural Gas Delivery and Supply ("Official Gazette of RS", No. 49/22) which are adopted by the Government of the Republic of Serbia on the basis of the Energy Law serve to define: general conditions of delivery and supply as well as conditions for the issuance of connection approval, content of the supply contract, rights and obligations of market players, content of delivery bill and supply bill, depending on supply conditions, conditions under which some customers cannot be disconnected from the network in case of unsettled liabilities for the withdrawn as well as other elements prescribed by the Law.

The Agency monitors the quality of delivery and supply and the quality of electricity and natural gas in line with the Rules on Monitoring Technical and Commercial Indicators and Regulating Quality of Electricity and Natural Gas Delivery and Supply which was adopted in the beginning of 2014. The Agency collects the relevant data, analyses relevant indicators, works on the upgrade of data quality with energy entities and prepares periodical reports in line with the Law. Achieved indicators are referred to in more detail in subsections 3.7 and 4.6.

6.2.5 Settling complaints and assistance in mediation procedure

The Agency also performs entrusted activities of administrative and legal protection of final customers. In 2023, as the second-instance body, the Agency adopted decisions against appeals filed by customers against acts of system operators on denial of system connection application. In most cases, appeals were filed due to a failure of a competent energy entity to adopt decisions in the first instance within the timeframe prescribed by the Law (the so-called "administrative silence") but also due to contesting set technical requirements and costs of connection service. In 2023, final customers filed appeals mainly against acts of electricity distribution system operator's acts while there were only 5 appeals filed against natural gas distribution system operator's acts.

Acting upon filed complaints, in 2023, the Agency mostly revoked decisions of system operators adopted within the first-instance procedure upon applications for connection to the distribution system mainly due to established violation of process law and violation of material regulations. Bearing in mind that the number of complaints considerably increased in 2023 in comparison to last year, as well as that there is still a trend of revocation of a great number of decisions adopted within the first-instance procedure due to strong violations of procedure, a necessity to educate the staff working on administrative-legal issues of system connections of facilities is indicated. This is particularly important in the field of implementation of a new law on general administrative procedure. The full implementation of this law was initiated in 2017 and this is one of the reasons of an increased number of approved complaints due to strong violations of procedure in 2023 as well.

In addition to being authorised to receive appeals in the field of administrative affairs related to system connections, the Agency is also authorised to settle complaints of system users filed against acts of system operator by which they adopted decisions on system access for the purpose of using the service of electricity and natural gas transmission or distribution.

Customers and system users are also entitled to have administrative-court protection against second-instance administrative decisions of the Agency regardless of the fact whether they were adopted within an appeal procedure where the Agency settles complaints against acts on denial of connection or within an appeal procedure where the Agency settles a complaint filed against an act by which a system operator denied an application and denied access to the system.

The number of complaints to the Constitutional Court of RS filed within the second instance procedure against decisions of the Agency decreased in 2023 in comparison to last year.

Even in 2023, as well as in the previous years, in line with the jurisdiction, the Agency offered all necessary clarifications and issued opinions on the enforcement of the regulations adopted by the Agency. The Agency acted upon complaints of customers who deny the regularity of actions undertaken by energy entities when complying with obligations prescribed by the Energy Law. The Agency also acted upon other customers' and system users' files, regardless of the fact whether natural or legal persons file them.

In addition, in case of dispute between energy entities or between an energy entity and a system user, which is settled pursuant to the law regulating mediation, the Agency offers expertise to dispute parties as well as the available data so as necessary documentation is prepared for the mediation procedure.

In 2023, there were no mediation procedures where the Agency participated upon request of any of the parties.

6.2.6 Special modes of protection of most energy-wise vulnerable customers

The Law defines conditions and method of award of special modes of protection of energy-wise vulnerable customers from the household category (conditions for the reduction of monthly bill for final customers within this category) on the basis of criteria set by the Government of the Republic of Serbia in detail.

In 2023, the assistance to most energy-wise vulnerable customers in the Republic of Serbia was offered in line with the Decree on Energy-Wise Vulnerable Customer which was adopted by the Government of RS in December 2022 and published in the Official Gazette of RS No. 137/2022 of December 9, 2022 and which entered into force on December 17, 2022. In 2023, a Regulation on Amendments and Supplements to the Regulation on Energy-Vulnerable Customers was enacted, which came into force in October 2023, and a Regulation on Amendments to the Regulation on Energy-Vulnerable Customers, which will be in effect from January 2024. The new Decree also enabled the reduction of bills for heating energy. The upper limit of total income of the household was increased and this is supposed to contribute to the increase in the number of households entitled to bill reduction. The right to be awarded with the status of vulnerable customer was also extended to those entitled to increased allowance for the assistance of third parties and it was enabled for village households to be awarded with a status of a vulnerable customer regardless of the area of the residential unit. The reduction of heating bills will not be addressed further, as heating energy is not within the scope of the Agency's work.

Criteria and conditions for the reward of the energy vulnerable customer status

The Regulation specifies in detail the criteria and conditions for obtaining the status of an energy-vulnerable customer, the content of the application for obtaining this status, the method of determining whether the conditions for obtaining the status of an energy-vulnerable customer are met, the issuance of a decision regarding the acquisition of this status, the method of issuing and the content of the decision on obtaining the status of an energy-vulnerable customer, the validity period of the decision, the content and scope of the right to a reduction in the monthly payment obligation, obtaining the status of an energy-vulnerable customer due to health conditions, the method of keeping records of energy-vulnerable customers, the method of securing funds for the protection of energy-vulnerable customers, penal provisions, and other issues necessary for establishing this status.

Financial resources for the protection of energy-vulnerable customers are provided from the budget of the Republic of Serbia. By protecting these customers at the expense of the budget, conditions are created for the faster development of the energy market.

The Regulation on Energy-Vulnerable Customers establishes that the status of an energy-vulnerable customer is granted to a household (single or multiple-member) living in a residential unit with a single metering point where electricity or natural gas consumption is measured, and which consumes the maximum amount of electricity or natural gas in accordance with this regulation. This status is also granted to a household living in a residential unit that receives heating energy according to the provisions of this regulation, as well as to a household member whose health or life could be endangered due to the interruption of electricity or natural gas supply.

A household, for the purposes of this regulation, is defined as a person living alone and not part of another household, as well as a household consisting of several persons, members of a family household, who live in a single residential unit and jointly use their income to meet basic living needs.

The criteria for obtaining the status of an energy-vulnerable customer are:

1) Financial Situation:
    - Total monthly household income;
    - Number of household members; and
    - Property status.
2) Receipt of cash social assistance, increased cash social assistance, child allowance, or increased allowance for the care and assistance of another person;

2a) The right of a household member to a pension up to the amount specified by the regulation and the existence of a contract for electricity supply in the name of that household member, or the registration of that household member with the supplier as an end customer of electricity;

3) The health condition of a household member.

Under the household member criterion in 2a), it is understood to include: a pensioner who is entitled to a pension up to the amount specified by the regulation, a recipient of the lowest pension, a recipient of temporary disability benefits for work disability of the second and third categories, or residual working capacity (according to the law regulating pension and disability insurance), and a disabled child receiving temporary benefits from the Republic Fund for Pension and Disability Insurance, who are residents of the Republic of Serbia.

An outstanding debt for electricity, natural gas, or heating energy does not exclude the right to obtain the status of an energy-vulnerable customer.

To determine the total monthly income of a household in accordance with the regulation, all earnings and income of the individual and family, as established by the regulations governing income and earnings affecting the entitlement to cash social assistance, are taken into account.

The total monthly income of households represents the condition for the award of the status of energy vulnerable customer are harmonised with the customer price index in the last six months. It is done in line with the data provided by the Serbian Statistical Office twice a year: on April 1 and on October 1 of the current year.

The table below indicates the maximum monthly income in line with the Rulebook on Setting Harmonised Level of Realised Monthly Income of Household which enables the award of the status of energy vulnerable customer.

Table 6-1: Total monthly income of a household as the condition for the award of the status of energy vulnerable customer in 2023

For a household with the following number of members		Total monthly income up to _ RSD	
	until June	until December 1	as of December 1
1	21,074.68	22,570.98	23,225.54
2	33,402.13	35,773.68	36,811.17
3	45,729.58	48,976.38	50,396.70
4	58,057.03	62,179.08	63,982.27
5	70,384.48	75,381.78	77,567.85
6	82,711.93	88,584.48	91,123.43
6 and more, it is added	12,327.45	13,202.70	13,585.58

The property condition of this regulation implies that the household does not own another residential unit other than a residential unit with a maximum area corresponding to the number of household members, as determined by the law regulating housing and building maintenance, increased by 10 m².

The maximum total area of the residential unit is:

1) for a one-person household up to 40 m²;
2) for a two-person household up to 58 m²;
3) for a three-person household up to 66 m²;
4) for a four-person household up to 74 m²;
5) for a five-person household up to 87 m²; and
6) for a six-person or larger household up to 96 m².

A rural household may own one residential unit and acquire the status of an energy-vulnerable customer regardless of the size of that residential unit.

A household whose members have received the right to monetary social assistance, child allowance, or increased allowance for assistance and care of another person acquires the status of an energy-vulnerable customer based on the act of the competent authority regarding the acquired right, regardless of the household's monthly income and property status.

A household of a pension recipient, up to and including the amount specified by regulation, who has a residence in the Republic of Serbia and has a contract or account for electricity supply in their name, or is registered with the supplier as the end customer of electricity, acquires the status of an energy-vulnerable customer based on the decision of the local government authority, and according to the act of the competent authority regarding pension rights and the contract for electricity supply, or the electricity bill registered with the supplier in their name, regardless of the household's monthly income and property status.

A household acquires the status of an energy-vulnerable customer based on health conditions if a member of the household uses medical appliances or devices necessary for maintaining health, which require power from the electrical distribution network, and whose health or life could be endangered by the interruption of electricity supply, regardless of the household's monthly income and property status.

The Decree on Energy-Wise Vulnerable Customer also prescribes the content of the application for the award of the status of energy vulnerable customer as well as the evidence accompanying the application.

The right to a reduction in the monthly liabilities for energy-vulnerable customers

Energy vulnerable customer may be awarded with the discount for monthly bill for certain quantities of:

1) kWh of electricity for all months and
2) kWh of natural gas for the following months: January, February, March, October, November and December

as it is indicated in the table below:

Table 6-2: Maximum rights to discount for monthly bill for consumed quantities

For a household with the following number of members	Maximum rights to discount for monthly bill for consumed quantities (MPU)	
	Electricity for all months	Natural gas for: January, February, March, October, November and December
	kWh	kWh
1	120	359
2-3	160	462
4-5	200	616
6 and above 6	250	770

The calculation of the reduction in the monthly bill for energy-vulnerable customers in accordance with the regulation is performed as follows:

1) The reduction in the monthly obligation for electricity is reflected in a reduction of the monthly bill by the amount determined by multiplying the quantity from Table 6-2 by the higher daily tariff from the green zone for consumers in the "Broad Consumption with Two-Tariff Measurement" category, increased by 10%, according to the regulated electricity price act for guaranteed supply, which has been approved by the Council of the Energy Agency of the Republic of Serbia and is currently in effect.
2) The reduction in the monthly obligation for natural gas is reflected in a reduction of the monthly bill by the amount determined by multiplying the quantity from Table 6-2 by the "energy" tariff for consumers in the household group supplied by JP Srbijagas, increased by 5%, according to the natural gas pricing list for public supply by JP Srbijagas, which has been approved by the Council of the Energy Agency of the Republic of Serbia and is currently in effect.

The extent of the reduction in the monthly obligation for electricity is achieved if the monthly consumption in the billing period, adjusted to 30 days, is less than or equal to 6.5 times the amount of electricity from Table 6-2.

The reduction in the monthly obligation is not applied if the actual monthly electricity consumption in the billing period, adjusted to 30 days, exceeds 6.5 times the amount from Table 6-2.

The extent of the reduction in the monthly obligation for natural gas is achieved if the household's monthly consumption in the billing period, adjusted to 30 days, is less than or equal to 2.5 times the amount of natural gas from Table 6-2.

The reduction in the monthly obligation is not applied if the actual monthly natural gas consumption in the billing period, adjusted to 30 days, exceeds 2.5 times the amount from Table 6-2.

If the monthly bill is lower than the calculated reduction in the monthly obligation under this regulation, the reduction will be applied up to the amount of the actual monthly bill.

The right to a reduction in the monthly obligation includes either obtaining a reduction for specific quantities of electricity, obtaining a reduction for specific quantities of natural gas, or obtaining a reduction for thermal energy. A household that has acquired the status of an energy-vulnerable customer based on health conditions simultaneously gains the right to both a reduction in the monthly obligation and protection against the interruption of electricity supply.

Number of energy vulnerable customers and realized bill discounts

Based on the data provided by competent departments of the Ministry of Mining and Energy, i.e. by energy entities, the maximum monthly number of energy vulnerable customers who exercised their right to bill discount in 2023 and the annual amount of RSD allocated for these purposes from the budget was the following:

Table 6-3: Exercised right to bill discount in 2023

	Customers entitled to reduction	
	Maximum monthly number of customers	Annual amount 000 RSD
Electricity	169,419	1,832,107
Natural gas	204	900
Total	**169,623**	**1,833,007**

The maximum monthly number of customers who received a reduction on their electricity bills during 2023 was more than 2.5 times higher than the previous year. On a monthly basis, the number of customers ranged from 56,409 in January to 169,419 in November 2023, with an average of 92,968 customers having received a reduction on their electricity bills throughout 2023.

The number of customers who received a reduction on their natural gas bills in 2023 ranged from 49 in February to 204 in October, with an average of 94 customers receiving a reduction on their natural gas bills throughout 2023.

Based on data obtained from the competent services of the Ministry of Mining and Energy, the number of beneficiaries of the Regulation for electricity, by month in 2023, was:

Table 6-4: Survey of energy-wise vulnerable electricity customers during different months of 2023

Month		Number of energy-wise vulnerable households	Level of reduction within electricity bill RSD
January		56,409	98,527,488.91
February		62,995	108,503,753.63
March		66,834	115,629,436.36
April		69,195	120,247,312.68
May		70,969	135,914,924.76
June		71,502	136,816,064.53
July		70,859	135,018,260.68
August		71,526	136,239,927.01
September		72,130	137,413,547.30
October		164,820	229,302,953.15
November		169,419	241,967,352.82
December		168,962	236,525,996.32
TOTAL			**1,832,107,018.15**

The total amount of benefits achieved by energy-wise electricity vulnerable customers in 2023 amounted to RSD 1,832,107,018.15. This amount includes the amounts of bills for consumed electricity including excise, VAT and the fee for public broadcasting company.

The number of energy-vulnerable electricity customers in 2023 who received a reduction on their bills is significantly higher than the number of such customers who received this benefit in 2022. The increase in the number of energy-vulnerable customers in 2023 was primarily due to the introduction of an additional criterion for acquiring the status of an energy-vulnerable customer, which included pensioners entitled to a pension up to and including the amount specified by the regulation, recipients of the lowest pensions, recipients of temporary allowances—workers with second and third-category disabilities, and disabled children receiving temporary allowances from the Republic Fund for Pension and Disability Insurance.

Poverty in the Republic of Serbia

According to the latest available data from the Republic Statistical Office, in Serbia, the poverty risk rate in 2022 was 20%, which is 1.2 percentage points lower compared to 2021. The risk of poverty or social exclusion was 28.1%, which is 0.3 percentage points lower than in 2021. The poverty risk rate represents the percentage of persons with available equivalent income lower than the poverty risk threshold and it does not indicate the number of persons who are truly poor but the percentage of people with equivalent available income lower than the poverty risk threshold. The poverty risk or social exclusion rate indicates the percentage of persons at risk from poverty or who are extremely materially deprived or who live in households with very low work intensity.

According to the records of the competent ministry, the number of families receiving monetary social assistance was 68,240 in 2023, while the number of children receiving child allowance as of December 2023 was 192,831. However, if one adds people with the lowest pensions, single breadwinners, beneficiaries of custodial care and assistance as categories who are in most cases and to the greatest extent exposed to energy poverty risk to this number, the number of individuals and families would be much higher.

Table 6-5: Review of beneficiaries of social care allowance in 2023

Number of family members	Number of families	Persons in total	Amount 000 RSD
1	33,328	33,328	390,876
2	13,119	26,238	201,772
3	6,504	19,512	118,850
4	6,591	26,364	138,664
5	4,501	22,505	108,726
6 and above 6	4,197	25,182	114,188
Total	**68,240**	**153,129**	**1,073,076**

Table 6-6: Review of beneficiaries of children allowance in 2023

For a child	Number of children	Amount 000 RSD
First-born	77,372	347,444
Second-born	65,294	283,530
Third-born	34,191	147,351
Fourth-born	15,974	71,177
Total	**192,831**	**849,502**

ANNUAL AND FINANCIAL REPORT

7. AGENCY ANNUAL REPORT

7.1 Basic data about the Agency

7.1.1 Establishment of and the scope of work of the Agency

The Energy Agency of the Republic of Serbia (Agency) was established pursuant to the 2004 Energy Law, which provided for the harmonisation of our legislation with the EU regulations at that time.

The Agency was registered at the Commercial Court in Belgrade on June 16, 2005 and started working on August 1, 2005.

Pursuant to the 2011 and 2014 Energy Law, the Agency continued its work of a regulatory body, established so as to improve and guide energy and natural gas market development based on principles of non-discrimination and efficient competition, through the establishment of a stable regulatory framework, as well as so as to perform other activities stipulated by the law.

By the adoption of the 2014 Energy Law, legal norms in the energy field were harmonized with the Third energy package of regulations on internal energy market and the *acquis* of the EU. The role of the Agency was strengthened significantly and its jurisdiction was expanded.

Via the adoption of a set of energy regulations in April 2021 (Law on Amendments to the Energy Law, Law on Use of Renewable Energy Sources, Law on Energy Efficiency and Rational Use of Energy) aimed at further adjustment and harmonization with the EU *acquis communautaire* in the energy field, the jurisdiction of the Agency was further regulated and expanded. However, the amendments to the Law on the Use of Renewable Energy Sources in 2023 abolished the Agency's authority in this area and transferred it to the ministry responsible for energy.

The most important Energy Agency jurisdiction areas in 2023 divided in groups include the following:

Certification and licencing

- certification of the transmission/transport system operator and
- licence issuance and withdrawal, keeping a licence registry and adoption of a regulation on the level of costs of licence issuance.

Price regulation

- adoption of methodologies for setting:
  - energy network use-of-system charges;
  - prices of regulated electricity and natural gas supply;
  - prices connection to network systems;
  - methodologies for billing electricity which was consumed without authorisation;
  - methodologies for setting ancillary services price;
  - methodologies for setting costs, method of compensation and cost allocation between NEMO and the transmission system operator;
  - methodologies for assessment of investments in risks and strategic infrastructure projects in the field of electricity, natural gas and oil
- approval of regulated prices;
-
- setting price of regulated ancillary services;
- monitoring the enforcement of methodologies and approved regulated prices;
- setting the level of compensation paid to a customer due to deviation from the prescribed quality of electricity and natural gas delivery and supply and
- drafting a report on the necessity of having further:
  - on the necessity of having further price regulation in the field of electricity supply of households and small customers;
  - on the necessity of having further price regulation of capacity reserve for system services – secondary and tertiary control and
  - on the necessity of having further necessity to maintain supply of the last resort.

Energy market monitoring

- adoption of rules and other documents:
  - supplier switching rules;
  - rules on prevention of abuse in electricity and natural gas markets;

- registration of electricity and natural gas wholesale market players and keeping registry in wholesale market;
- rules on quality of electricity and natural gas delivery and supply;
- act on manner, procedure and deadlines for keeping bookkeeping registries for regulation purposes and for the purpose of implementation of account unbundling for different energy activities;
- regulation on the level of costs of energy licence issuance;
- regulation on the method of procedure for imposing measures; keeping a registry of imposed measures;
- regulation on exemption for new interconnector overhead lines and gas infrastructure;
- procedure of customers' entitlement to access the data on one's own consumption;
- instructions for elaboration of Network Codes in the fields of electricity and natural gas;
- instructions, recommendations and guidelines for the enforcement of the regulations within the Agency jurisdiction;

• approval of rules:

- electricity transmission and distribution network code;
- natural gas transmission and distribution network code and natural gas storage code;
- electricity market rules;
- on connection of facilities to the transmission system;
- for suspension and reinitiation of market activities;
- on capacity allocation between bidding zones;
- on publication of key market data;
- harmonised network codes of system operators;

• approval of other regulations:

- multi-year development plans of transmission system, distribution system and oil derivatives transport system via product lines;
- investment plans of system operators;
- bilateral contracts for cross-border transmission capacity allocation;
- procedure for the connection to the transmission system;
- harmonisation programmes for non-discriminatory behaviour of the system operator; acts on conditions for appointment, duration of term of office and dismissal of the compliance officer for the programmes for non-discriminatory behaviour and prior approval of the appointment of a candidate nominated as the compliance officer for the programmes for non-discriminatory behaviour;
- plans for the transfer of metering devices to distribution system operators;
- regulation of a transmission system operator on the level of fee for the guarantee of origin;
- regulation of the system operator on the non-standard service prices;
- methodology adopted by the entity entitled with exemption from regulated transmission and natural gas storage use-of-system charges;
- legal act of the natural gas distribution system operator defining the level of connection costs via standard connections;

- giving opinion on plans for implementation of smart metering systems;
- drafting report with background and with the conclusion on the compliance with conditions for Nominated Electricity Market Operator (NEMO) appointment;
- drafting opinion with background on the Annual Report of the Non-Discriminatory Behaviour Programme Officer;
- approval of operational limitations within the transmission system connection procedure;
- deciding on the criteria for granting exemptions for connecting customers' facilities and production units to the network.
- deciding upon request for derogation within the electricity transmission connection procedure and keeping registry of all derogations;
- monitoring compliance of licenced energy entities with obligations and monitoring market functioning and
- contribution to harmonisation of procedure of the exchange of data relevant for the most important market processes in the region.

Deciding upon appeals and customer protection

- deciding upon appeals:
  - against denial of the access to the system and
  - against a decision of the system operator upon an connection application or against failure to adopt a decision on it;

- considering files submitted against the system operators' and suppliers' failure to comply with obligations;
- providing professional support and data to applicants who settle their disputes via mediation;
- imposing measures and keeping a registry of imposed measures;
- launching offence procedures and economic offence procedures;
- examining circumstances and launching procedures with competent bodies in case of competition offence and market limitation offence and
- taking measures so as to make the list of practical data on their rights available to system users and customers.

International cooperation

- The Agency cooperates with regulatory authorities from other countries, as well as with other international bodies and organisations in line with the law and ratified international agreements and the decisions of the Council aiming at:
  - development of the regional and Pan-European electricity and natural gas market;
  - encouraging operational agreements ensuring optimal network operation;
  - achievement of equal conditions for all market participants;
  - promoting coupling of organised electricity markets;
  - common transmission capacity allocation between bidding zones;
  - creating conditions for an adequate level of cross-border capacities in the region and among regions;
  - coordinated implementation of network codes and congestion management rules;
  - contribution to the compatibility of data exchange procedures and
  - improvement of its operations in line with positive international experience and standards.

The Agency provides non-discriminatory access to the systems through effective competition and efficient operations of electricity and natural gas markets.

Within its scope of work, the Agency monitors:

- efficient accounts unbundling in licenced energy entities;
- existence of cross-subsidising among energy entities which deal in different energy activities within the same energy entity;
- compliance with energy entities' obligations prescribed in line with the Law;
- application of the rules for transmission capacity allocation between bidding zones in cooperation with regulatory bodies from other states;
- application of the rules for transport capacity allocation between bidding zones in cooperation with regulatory bodies from other states;
- publishing the data on cross-border transmission capacities and on system use by transmission and transport system operator;
- enforcement of mechanisms for the removal of congestions in the transmission or transport system;
- conditions and costs for the connection of new electricity producers to the transmission or distribution system, so as objectivity, transparency and non-discrimination could be guaranteed, in particular having in mind the costs and benefits from different technologies for electricity generation from renewable energy sources and combined electricity and heat energy production;
- the time necessary for system operators to connect a facility to the system, i.e. the time necessary to remove breakdown in case of delivery disruption;
- the way reserves are used within the system;
- transparency and competition level, in cooperation with the bodies authorised for competition issues;
- functioning of an organised electricity market as well as the organised market operator's compliance with the principles of transparency and non-discrimination;
- the level of market openness and its efficiency and competence in wholesale (among suppliers) and retail (final customers supply);
- the conditions for access to the storage, linepack and use of other ancillary services in the natural gas sector;
- justifiability of costs and checks whether methodologies for setting use-of-system charges for which exemption was approved by the Agency are applied properly;
- compliance with customer protection measures defined by this law and
- Realisation of development plans and investment plans of system operators which the Agency approved.

7.1.2 Organisation of the Agency

The Energy Agency of the Republic of Serbia is independent in performing organisational activities and other activities which enable the performance of the activities stipulated by the law. Pursuant to the Law, the Council of the Energy

Agency (hereafter: the Council) adopts all the decisions on the issues under the jurisdiction of the Agency by majority of votes among Council members, except if it is otherwise stipulated by this law or Statute.

Within the Council, there is the President and four members. The Council President stands on behalf of the Agency and represents it, decides on the issues within the scope of work of the Agency as defined in Article 54of the Law, organises the activities of the Agency and manages the activities of the Agency, proposes decisions and other acts adopted by the Council and monitors their implementation, has the director's authority in activities related to exercising rights and obligations of the personnel and performs other activities in line with the law, Statute and Council authorisation.

The Council adopts the Statute which regulated internal Agency organisation and procedures, Rules of Procedure and other general acts pursuant to the law. Agency Statute is approved by the National Assembly of the Republic of Serbia.

Organisational structure of the Agency was established based on elaborate made by the consulting house KPMG and approved by the Ministry of Mining and Energy. Organisation of the Agency is set so as to comply with the requirements in terms of efficiency and rationality in its work. To that end, Agency operates through four departments with a defined scope of work, with necessary level of coordination during the performance of complex duties for which more than one department is responsible.

Basic organisational units include:

- Energy and Technical Department;
- Economics and Finance Department;
- Legal Department and
- Organisational and General Affairs Department.

7.1.3 Independence and responsibility

In the performance of its activities, the Agency is an autonomous legal entity and it is independent from the executive authorities, other state bodies and organisations and legal and natural persons dealing in energy activities. The independence of the Agency does not prejudice its cooperation between the Agency and other national bodies, the implementation of the general policy adopted by the Government of the Republic of Serbia in issues which are not related to the jurisdiction and responsibilities of the Agency.

The Council President and members are responsible for their work to the National Assembly. At least once a year, they submit the financial report and the report on the energy sector to the Assembly. The annual report includes the data on the Agency's work during the previous year, its financial operations and the situation in the energy sector of the Republic of Serbia which is within the Agency's competence.

The independence of the Agency from the executive authorities is also reflected in the fact that, in line with the Law, the president and members of the Council of the Agency are selected by the National Assembly based on a public invitation and the fact that they are selected from a group of prominent experts in the energy field. The president and members of the Council may only be persons who are citizens of the Republic of Serbia, with university degree in technical, legal or economic area and with at least 10 years of working experience in the energy field. The following list of persons shall not be selected as the president and member of the Council: MPs of the National Assembly, MPs of the Assembly of the Autonomous Province, elected members of city councils, other elected and appointed persons, as well as political party officials; owners or co-owners of energy entities, as well as persons whose spouses, children or relatives in straight line regardless of the degree of kinship, or relatives in lateral line ending with the second degree of kinship, are persons lawfully convicted for criminal offences against official duty, corruption, fraud or other criminal offences making them unfit to perform the functions they are elected.

In 2017, the selection of AERS Council President and members was initiated in line with the provisions of the new Law for the first time. The selection was completed in March 2018 and in line with this, new AERS Council members commenced their term of office in March 2018.

The Agency has its own financing sources, defined by the Law, separate from the state budget.

The Agency is financed from the revenue arising on the basis of regulation activities from the part of regulated revenues from the system access set by the methodologies adopted by the Agency, on the basis of energy license issuance, as well as from other revenues from the activities within its jurisdiction in line with the law. The Agency may also raise funds from grants, except from the grants from energy entities or persons connected to those entities.

Pursuant to the Article 61 of the Law, the Agency adopts a Financial Plan defining total revenue and expenditure, including contingency funds and elements for full insight into the compensation and employment policy which provide adequate professional personnel. The financial plan is approved by the National Assembly. The financial plan is submitted to the National Assembly at the latest by the end of October of the current year for the following year. Upon the approval of the National Assembly, it is published in the "Official Gazette of the Republic of Serbia". The Agency submits annual Financial Plan to the National Assembly regularly and within the prescribed deadline to the National Assembly.

The Agency 2023 Financial Plan was adopted by Agency Council within the prescribed timeframe on October 27, 2022 and it was submitted to the National Assembly for adoption purpose on the same day. On December 26, 2022, on the 4th meeting of the Second Regular Session, the National Assembly adopted a decision on the approval to the 2023 Financial Plan of the Energy Agency of the Republic of Serbia. The adoption of the Financial Plan of the Agency created conditions for further improvement of the Agency work and of its organizational structure and the number of employees. The Decision of the National Assembly of RS on the Approval of the AERS 2023 Financial Plan was published in the Official Gazette No. 142/22 of December 27, 2022.

Annual calculations of revenue and expenditure of the Agency are audited by an authorised auditor. The auditor's report is also submitted to the National Assembly. If one determines that the annual revenue of the Agency exceeds total expenditure, the deviation amount is transferred into the financial plan as revenue for the following year. However, the sources and the amount of revenue for the following year are harmonised with realistic expenditure of the Agency for that year approved by the National Assembly.

INDICATORS OF INDEPENDENCE OF ENERGY REGULATORY AUTHORITIES

The reasons for the transfer of some of jurisdiction related to economic regulation in the electricity and natural gas sectors from state bodies to independent regulatory authorities may differ, but the common idea behind this is to strive to remove the risks arising from market imperfections (natural and/or factual monopoly in the sector), to remove noted weaknesses of the centralized (state) management of the energy sector (stimulating competition) and to strengthen the credibility of the sector in the eyes of potential investors. Therefore, the objective of most energy regulators is to protect customers and investors, while the main mechanisms to achieve that is to regulate prices, prescribe rules and monitor the actions market participants.

There is mutual link between Agency goals, functions and activities with those of the EU electricity and natural gas regulatory authorities since the EU *acquis communautaire* (directives and regulations) have been implemented in the energy sector. The 2014 Energy Law also transposed the provisions strictly prescribing the regulator's independence into the legal system of the Republic of Serbia, i.e.:

- functional independence;
- personal independence and
- financial independence.

Functional independence

An independent regulatory body has to be free in the selection of instruments used to perform the duties in its jurisdiction. The regulator is not allowed to accept instructions from state institutions or energy entities (companies) and regulator's decisions cannot be subject to approval or annulment by executive authorities.

Personal independence

Personal independence of a regulatory authority is provided by:

- setting strict criteria for the appointment (expertise, lack of conflict of interest) and dismissal (e.g. legally-binding conviction for criminal act, offence against rules on the conflict of interest) of management body members (in Serbia: Council of the Agency);
- establishment of rotation between management body members, by not having all management members' mandate ending at the same time, thus providing the separation between processes of the selection of regulator's management and election cycles on political level and
- autonomy in the human resources recruiting - issues related to organisation and human resources have to be within exclusive jurisdiction of the regulator. Regulatory authority has to have autonomy in making decisions on the engagement and dismissal of employees, as well as on the number of them.

Financial independence

Financial independence of the regulatory authority is provided by:

- full independence from the state budget (as prescribed by the Energy Law) or clear independence of the regulator's budget from other budget beneficiaries within the state budget;
- autonomy in the allocation of approved funds. It implies that the regulatory authority has the exclusive right to make decisions on how the approved budget will be spent, i.e. the regulator may neither ask nor accept instructions on its budget. Namely, procedure prescribed in the Energy Law implying that the National Assembly approves the Financial Plan of the Agency does not contradict the principles of regulatory authority independence. In the opinion of the European Commission expert departments, the role of the legislature authorities (parliament) is to approve general financial allocation (not individual budgetary items) in order to enable the regulatory authority to perform the duties entrusted to it by the law in an efficient and effective way.

Full independence of the regulatory authority is also one of obligations on the accession of the Republic of Serbia to the European Union and it is subject to the European Commission in the process of accession to the European Union. Criteria of independence of the Energy Agency as regards compliance with obligations arising from the Treaty establishing the Energy Community ("Official Gazette of RS", No. 62/06), Berlin Process and CESEC Initiative is also monitored by the Energy Community Secretariat. The position and the role of the Energy Agency within the legal system of the Republic of Serbia are defined by the Energy Law which also transposes the provisions of the European energy law (the so-called Third Package of regulations on internal EU energy market) which regulate functional, personal and financial independence of the regulatory authority.

7.2 Activities of the Agency in 2023

In 2023, the Agency Council which manages the Agency held 48 sessions (46 regular ones and 2 extraordinary ones) during which decisions, approvals, certificates and other acts in the fields of: price regulation, issuance of energy licences, electricity and natural gas market monitoring establishment and implementation, internal organisation of the Agency and other issues within the jurisdiction of the Council were adopted.

7.2.1 Licensing energy entities

Activities which the Agency performs as entrusted ones, related to the issuance of licences of energy entities for energy activities are administrative-legal procedures which include:

- issuing licences for energy activities;
- amendments to issued licences;
- withdrawal, revoking and adoption of decision on withdrawal of the licence by virtue of law;
- monitoring the fulfilment of prescribed requirement by energy entities during the validity period of the licence and
- keeping registry of issued and withdrawn licences.

Requirements for issuance and withdrawal of licenses and keeping registry of issued licenses are prescribed by the Energy Law and the Rulebook on Energy Licence and Certification ("Official Gazette of RS", No. 87/15, 44/18 – other law and 83/21) regulating the conditions for issuing licenses for energy entities and certification and which are adopted by the ministry in charge of energy issues. These are the main regulations the Agency implements within the licence issuance procedure. The rulebook on energy licence and certification is available with prescribed forms and proofs which are necessary to be submitted along with the application for energy license on the Agency website.

The registry of issued licenses is a public document and it is both available in the written form and kept in the Agency registry and in the electronic form available on the website of the Agency (www.aers.rs).

In order to perform these duties, in line with its legal jurisdiction, the Agency adopts a regulation on the level of costs for the issuance of energy licences. The act is approved by the Ministry of Finance and published in the "Official Gazette of RS". The act defines the cost of the Agency related to the provision of this public service which implies the establishment of the compliance with the conditions for the performance of energy activities for each energy activity separately which is borne by licence applicants. The Decision on Harmonisation of the Level of Costs for Energy Licence Issuance ("Official Gazette of RS", No. 42/22) and the Decision on Harmonisation of Level of Costs of Issuance of Energy Licences ("Official Gazette of RS", No. 24/23) which was in force as of March 2023 are published on the Agency website.

The Council of the Agency adopts a decision on the issuance of a licence for the performance of an energy activity within the administrative procedure. Once the decision enters into force, the Agency includes that licence in the registry of licences.

In 2023, the Agency Council issued licences for 12 energy activities out of 28 energy activities for which they are competent to issue licences.

In 2023, the Agency received 86 licence applications. Along with 2,564 applications received in 2006-2023, it amounts to 2,650 applications in total.

In 2023, the processing of incomplete applications from the previous year continued, as well as of applications received in that year. By the end of the year, the Agency's Council issued 99 new licenses, while in 11 cases the procedure was concluded by rejecting the applications, in one case by refusing the application, and in one case the procedure was suspended. During 2023, the Agency did not make any decisions on temporary license revocation, but in one case, a decision was made on the permanent revocation of a license, though only partially, i.e., for one energy facility. Additionally, in 12 cases, license issuance decisions were revoked at the request of energy entities, and two licenses expired by virtue of law.. Since numerous licences were issued in the past and since licenced energy entities did not apply for the extension of their validity even after their validity period expiration, these licences were erased from the public Registry of Issued Licences which is kept by the Agency *ex officio*. At the end of 2023, there were 905 ruling licences registered.

In certain cases, the applications filed with the Agency did not include all the necessary documents and therefore, they were amended in line with the law regulating administrative procedure by energy entities upon the Agency's request. After noticed inadequacies were removed and application files completed, applications were reassessed in order to check if the conditions for licence issuance are met.

As of 2008, there was a great number of applications for the amendments of the decisions on issuance of energy licenses, especially in the oil sector – for the activity: trade in motor fuels and other types of fuels on petrol stations and trade in oil, oil derivatives, biofuels, bioliquids, compressed natural gas, liquefied natural gas and hydrogen. Most applications were submitted due to the change of facilities where energy activity is performed. In 2023, the Agency adopted 46 decisions on amendments on decisions mostly for the issuance of license for activities in the oil sector.

The Agency is not responsible for energy entities that did not comply with the conditions for issuing licence. In 2023, not one report of a competent inspector was submitted to the Agency that could be the ground for filing an economic offence against a legal person performing energy activity without a licence.

The number of submitted applications and of licences issued in 2023 (some applications are from 2015 and licences issued in 2023) for each activity are given in Table 7-1.

Table 7-1: Submitted applications and approved licenses in 2023 per each activity

No.	Activity	No. of applications	No. of approved licences
1	Power production	1	2
2	Combined power and heat production	2	2
3	Electricity transmission and transmission system operation	0	0
4	Electricity distribution and distribution system operation	0	0
5	Electricity distribution and closed system operation	0	0
6	Electricity supply	9	8
7	Electricity wholesale supply	12	10
8	Organised electricity market operation	0	0
9	Natural gas transmission and transmission system operation	0	0
10	Natural gas storage and storage operation	0	0
11	Natural gas distribution and distribution system operation	0	0
12	Natural gas supply	4	3
13	Natural gas wholesale supply	5	5
14	Natural gas public supply	11	24
15	Oil derivatives production	2	2
16	Oil transport through oil pipelines	0	0
17	Oil derivatives transport through product lines	0	0
18	Storage of oil, oil derivatives and biofuels	4	4
19	Trade in oil, oil derivatives, biofuels, bioliquids, compressed natural gas, liquefied natural gas and hydrogen	3	4
20	Trade in fuels outside petrol stations	0	0
21	Filling vessels for liquid petroleum gas, compressed and liquefied natural gas	3	2
22	Trade in motor fuels and other fuels on petrol stations	30	33
23	Trade in fuels meant for vessels	0	0
24	Biofuels production	0	0
25	Bio liquids production	0	0
26	Blending biofuels with fuels of oil origin	0	0
27	Blending bioliquids with fuels of oil origin	0	0
28	Hydrogen production	0	0
	Total	**86**	**99**

The updated register of licensed energy entities for each energy activity is available on the Agency's website (www.aers.rs).

7.2.2 Price regulation

In the domain of price regulation, the Agency's Council amended the Methodology for Determining the Access Price to the Electricity Transmission System in January 2023.

Additionally, in July 2023, the Council amended the methodologies for determining regulated prices for energy entities in the natural gas sector, in accordance with the Law. These include: the Methodology for Determining the Access Price to the Natural Gas Distribution System and the Methodology for Determining the Price of Natural Gas for Public Supply.

Acting within its powers established by the Law, the Agency's Council adopted the Methodology for Calculating Unauthorized Electricity Consumption in October 2023. This methodology defines the calculation method for all cases of unauthorized consumption as defined by the Law. According to the Law, the distribution system operator calculates the unauthorized consumption of electricity in accordance with this methodology and issues and delivers a bill to the person who has consumed electricity without authorization.

In January 2022, the Council of the Agency adopted a Methodology for Setting Prices of Ancillary Services and Prices of Capacity Reserve for System Services of Secondary and Tertiary Control. Upon this, in line with the Methodology, in February 2022, the Council adopted decision on prices of system and ancillary services within the power system for 2022. In addition, in December 2023, based on the given Methodology, the Agency Council adopted a decision on prices of system and ancillary services in the power system for 2024. By these decisions, the Agency set the prices of capacity reservation for system services of secondary and tertiary control which are necessary so as to secure safe, reliable and stable operation of the power system, i.e. for the ability to regulate frequency and exchange capacity. The Agency also set the prices of ancillary services related to voltage regulation, i.e. reactive power and prices of unit running from black start.

In December 2023, the Agency Council also adopted reports on necessity of regulation of price of capacity reserve for system services of secondary and tertiary control, necessity of a follow-up of electricity supply of the last resort and necessity of electricity price regulation for guaranteed supply.

In 2023, the Council of the Agency approved the following decisions on prices:

- In the field of electricity:
  - Approval of decision on regulated price of electricity for guaranteed supply to PE EPS Beograd in March 2023 and in September 2023 whereby the electricity price for guaranteed supply was increased for the second time by 8%;

    Acts on prices and approvals of the Agency were published in the “Official Gazette of the Republic of Serbia” while their application was postponed for May 1, 2023, i.e. November 1, 2023;
  - Approval of decisions on prices of non-standard services of the electricity distribution system operator – Elektrodistribucija Srbije d.o.o. Beograd – in October 2023.
- In the field of natural gas:
  - Approval of decisions on natural gas public supply for all 31 public suppliers in March 2023 and in September 2023;
  - Acts on prices and approval of the Agency are published in the “Official Gazette of the Republic of Serbia” while the application of these prices started as of May 1, 2023, i.e. of November 1, 2023;
  - Approval of decision on the level of connection costs of the following distribution system operators:
    - Sombor-Gas LLC Sombor, in March 2023;
    - Resava-Gas LLC Svilajnac, JKP Toplana Šabac, and YUGOROSGAZ ad Belgrade, in April 2023;
    - AD Užice Gas and JP Gas Temerin, in June 2023;
    - JP Gas Ruma and Sigas LLC Požega, in July 2023;
    - JKP 7. Oktobar Novi Kneževac, in December 2023;
  - Approval of decisions on the prices of non-standard services for the following system operators:
    - Sombor-Gas LLC Sombor and JKP 7. Oktobar Novi Kneževac, in October 2023;
    - JP Polet Plandište and JP Kovin Gas, in November 2023.

In line with the jurisdiction, in December 2023, the Council of the Agency adopted a legal act confirming that charges for long-term capacity and initial prices of capacity products of Gastrans LLC were set in line with the act on exemption and the Tariff Methodology for Setting Tariffs for Natural Gas Transmission Service of Gastrans LLC.

In April 2021, the Council of the Agency adopted a Decision on Method, Procedure and Deadline for Keeping Bookkeeping Registry for the purpose of regulation and realization of unbundling accounts for different activities.

This Decision defines in more detail the method, procedure and deadlines for keeping business books as bookkeeping registries for the purpose of regulation, of the realization of unbundling accounts of energy entities for different activities and it sets the type of data and documentation necessary for the work and for the observation of efficiency of accounts unbundling by the Agency, in line with the Law.

Permanent activities of the Agency related to price regulation include:

- Provision of professional assistance to energy entities as regards the enforcement of methodologies for setting prices and monitoring their adequate implementation;
- Monitoring the enforcement of methodologies for setting costs of connection to electricity transmission and distribution system, i.e. to natural gas transmission and distribution and deciding upon customers’ appeals which provides adequate level of customer protection and directly contributes to appropriate implementation of methodologies in practice;

- Provision of professional support to energy entities as regards unbundling their funds and costs into different activities, as well as the control over unbundling;
- Monitoring and analysis of data submitted by energy entities as regards realised costs and regulated prices;
- Half-yearly monitoring and comparison of actual electricity and natural gas prices in the region and in Europe and
- Analysis of solutions and solution proposals as regards price regulation and drafting amendments and improvement of existing legislation.

7.2.3 Monitoring electricity and natural gas market

So as to create conditions for proper market functioning, the Law stipulates the adoption, i.e. harmonisation with the new Law of all the rules prescribed by the Law. In 2012, the Agency Council adopted Rules on Supplier Switching ("Official Gazette of RS", No. 93/12). In 2015, the Council adopted new Rules in order to harmonised them with the 2014 Law and the Rules were amended in 2017 ("Official Gazette of RS", No. 65/15 and 10/17).

In late 2013, the Agency Council adopted the Rules for Monitoring Technical and Commercial Indicators and Regulation of Quality of Electricity Supply ("Official Gazette of RS", No. 2/14). In 2023, the Council took care of their implementation.

In March 2016, the Council adopted the Rulebook on Method of Procedure and Imposing Measures and Keeping Registry of Imposed Measures which is applied to those market players who do not comply with their obligations prescribed by the Law.

In July 2016, the Agency Council adopted a Decision on Procedure of Exercising Right of Final Customer to Access Data on One's Own Electricity and Natural Gas Consumption.

Acting in line with the jurisdiction prescribed by the Law on Amendments to Energy Law from April 2021 ("Official Gazette of RS", No. 40/21), within the legal deadline, in June 2021, the Council of the Agency adopted 8 instructions for drafting network codes in the fields of electricity (3) and natural gas (5). These instructions provide guidelines to system operators for the preparation of bases for drafting "network codes" which regulate the connection to the electricity transmission and distribution system in the electricity field and capacity allocation, congestion management, interoperability, setting transmission use-of-system charges structure and transmission system balancing in the field of natural gas, i.e.:

- Instruction for drafting network code related to connection of production units to the network;
- Instruction for drafting network code related to connection of customers' facilities to the network;
- Instruction for drafting network code for connection of high voltage direct current systems to the network;
- Instruction for drafting network code on harmonised natural gas transmission use-of-system charges;
- Instruction for drafting network code on natural gas transmission capacity calculation and allocation;
- Instruction for drafting network code on procedure for congestion management and publication of technical data and other data and pieces of information for the access to the natural gas transmission system;
- Instruction for drafting network code on cooperation between operators of connected transmission systems and rules on data exchange;
- Instruction for drafting network code on rules for natural gas balancing in transmission.

In August and September 2021, the Council of the Agency approved the text of all eight network codes which were prepared by system operators in line with given instructions which confirmed the compliance of the Adapted Texts of Electricity and Natural Gas Network Codes for the purpose of adoption of legal acts of network codes which are adopted by the Government upon the proposal of the Ministry of Mining and Energy in line with the Law. In September and October 2022, the Government of the Republic of Serbia adopted all eight network codes in the fields of electricity and natural gas.

Acting in accordance with the new authorities established by the network rules regulations, the Agency's Council issued decisions in December 2023 on determining the criteria for granting exemptions from the application of these rules for connecting production units to the network, as well as for connecting customers' facilities. Both decisions, and the established criteria, were published on the Agency's website in accordance with the network rules regulations.

In October 2021, the Council of the Agency adopted Rules on Prevention of Abuse in Electricity and Natural Gas Markets (REMIT Rules). These rules specify conditions for the registration of wholesale electricity and natural gas markets participants in line with obligations of the Republic of Serbia assumed by ratified international treaties and the law regulating the energy field (the so-called light REMIT). In March 2022, the Agency Council adopted Instruction for Registration Procedure, Keeping Registry and Wholesale Market Players Monitoring.

In line with REMIT rules and this Instruction, as of April 1, 2022, the Agency initiated the registration of wholesale electricity and natural gas market players. Acting upon submitted registration applications of players intending to perform wholesale transactions by placing trading orders, by the end of 2023, the Agency registered 67 electricity and

natural gas wholesale market players in Serbia. The registry of all wholesale market players who applied is available on the website of the Agency as well as all necessary information relevant for monitoring their behaviour in the market as well as formats which are used by players for filing the application, format for notification of misuse in the market and the notification on the delay in the publication of insider information which are published in line with the commitments arising from ratified international treaties (Law on Establishing Energy Community).

The remaining rules are adopted by energy companies, upon the Agency's approval.

In December 2023, the Council of the Agency approved the following rules:

- Rules for the allocation of transmission capacities between bidding zones of the Republic of Serbia and Hungary - Harmonized Allocation Rules for the distribution of long-term transmission rights, Rules for the explicit allocation of daily transmission capacities at the border between the trading zones of Hungary and Serbia, and Rules for the allocation of intraday transmission capacities at the border between the MAVIR ZRt (MAVIR) trading zone and EMS AD Belgrade for the year 2024;
- Rules for Transmission Capacity Allocation between Trading Zones of the Republic of Serbia and Romania (Rules for Annual and Monthly Transmission Capacity Allocation on Border between Trading Zones *C.N.T.E.E TRANSELECTRICA S.A*. and *EMS* JSC Belgrade for 2024; Rules for Daily Auctions for Interzonal Capacity Allocation on Border between Trading Zones of *EMS* JSC Belgrade and *C.N.T.E.E. TRANSELECTRICA S.A.* for 2022 and Rules for Intraday Transmission Capacity Allocation on Border between Trading Zones *C.N.T.E.E. TRANSELECTRICA S.A*. and *EMS* JSC Belgrade for 2024);
- Rules for Transmission Capacity Allocation between Trading Zones of the Republic of Serbia and the Republic of North Macedonia (Rules for Annual and Monthly Auctions for Transmission Capacity Allocation on Border between Trading Zones of *EMS* JSC Belgrade and *AD MEPSO* for 2024; Rules for Daily Auctions for Transmission Capacity Allocation on Border between Trading Zone of *EMS* JSC Belgrade and *AD MEPSO* for 2022 and Rules for Intraday Transmission Capacity Allocation on Border between Trading Zones of *EMS* JSC Belgrade and *AD MEPSO* for 2024)
- Rules for the allocation of transmission capacities between the trading zones of the Republic of Serbia and Montenegro (Rules for annual and monthly auctions for the allocation of transmission capacities at the border between the trading zone of EMS AD Belgrade ("EMS") and the Montenegrin Transmission System AD Podgorica ("CGES"));
- Rules for the allocation of transmission capacities between the trading zones of the Republic of Serbia and Croatia (Harmonized Allocation Rules for long-term transmission rights; Rules for the explicit allocation of daily transmission capacities at the border between the trading zones of Croatia and Serbia; and Rules for the allocation of intraday transmission capacities at the border between the trading zones of the Croatian Transmission System Operator ("HOPS") and EMS AD Belgrade ("EMS"));
- Rules for the allocation of transmission capacities between the trading zones of the Republic of Serbia and Bulgaria (Rules for the explicit allocation of daily transmission capacities between the trading zones of Bulgaria and Serbia; and Rules for the allocation of intraday transmission capacities at the border between the trading zones of ELECTROENERGY SYSTEM OPERATOR EAD and EMS AD Belgrade);
- Rules for the allocation of transmission capacities between the trading zones of the Republic of Serbia and Bosnia and Herzegovina (Rules for annual and monthly auctions for the allocation of transmission capacities at the border between the trading zones of EMS AD Belgrade and the Independent System Operator in Bosnia and Herzegovina ("NOSBiH"); Rules for daily auctions for the allocation of transmission capacities at the border between the trading zones of EMS AD Belgrade and the Independent System Operator in Bosnia and Herzegovina ("NOSBiH"); and Rules for the allocation of intraday transmission capacities at the border between the trading zones of EMS AD Belgrade and the Independent System Operator in Bosnia and Herzegovina ("NOSBiH")).

In June 2022, the Agency Council adopted the Report on the Assessment of Compliance with Prescribed Conditions for Nomination of SEEPEX JSC as an independent organized electricity market operator in the Republic of Serbia (NEMO) which is a condition for NEMO appointment by the Government of RS in line with the Law.

In 2023, the Agency monitored the enforcement of formerly adopted rules by analysing needs and initiatives for amendments of these rules also by participating in the work of commissions appointed to monitor their enforcement.

As an observer, one representative of the Agency participates in all the commissions which have been established so far.

In 2023, the Agency Council approved the following acts:

- Transmission System Code of EMS AD in November 2023;
- Rules for connecting facilities to the transmission system of EMS AD in November 2023;
- Procedure for connecting facilities to the transmission system and part of the distribution system managed by the transmission system operator EMS AD in November 2023;
- Oil Transport System Code of Transnafta Ltd. Pančevo in April 2023;

- Transmission System Development Plan of Yugorosgaz-Transport LLC Niš for the period 2023-2032 in October 2023;
- Transmission System Development Plan of Transportgas Serbia LLC Novi Sad for the period 2022-2031 in December 2023;
- Natural Gas Distribution System Development Plan with an Investment Plan for the period 2023-2027 by RESAVA-GAS Svilajnac in December 2023;
- Natural Gas Distribution System Development Plan with an Investment Plan for the period 2023-2027 by GAS BEČEJ LLC Bečej in December 2023;
- Natural Gas Distribution System Development Plan with an Investment Plan for the period 2023-2027 by JKP 7. Oktobar Novi Kneževac in February 2023;
- Natural Gas Distribution System Development Plan with an Investment Plan for the period 2024-2028 by JKP 7. Oktobar Novi Kneževac in December 2023;
- Natural Gas Distribution System Development Plan with an Investment Plan for the period 2023-2027 by SIGAS LLC Požega in December 2023;
- Natural Gas Distribution System Development Plan with an Investment Plan for the period 2023-2027 by Sombor Gas LLC Sombor in August 2023;
- Natural Gas Distribution System Development Plan with an Investment Plan for the period 2023-2027 by JKP "Standard", Ada in January 2023;
- Natural Gas Distribution System Development Plan of Yugorosgaz AD Belgrade for the period 2023-2027 in December 2023.

Programmes for non-discriminatory treatment, which, in line with the law, distribution system operators which are a part of a vertically integrated company are supposed to adopt are important for energy market monitoring. These programmes are approved by the Agency. In June 2016, the Council of the Agency approved the Compliance Programme for Non-Discriminatory Behaviour of Distribution System *EPS Distribucija* LLC Belgrade. The Council also approved conditions for the appointment and duration of term of the distribution system operator compliance officer. In July 2017, the Agency Council approved the Annual Report on Implementation of Compliance Programme for Non-Discrimination Behaviour for 2016 which was submitted by the compliance officer. By the decision of September 2019, the Agency Council did not approve the Annual Report on Implementation of Compliance Programme for Non-Discrimination Behaviour for 2018. At the end of 2020, the Government of the Republic of Serbia started activities in order to perform adequate unbundling of the distribution system operator from the vertically integrated company PE *EPS* (separation of *Elektrodistribucija Srbija d.o.o. Belgrade*) which was finalized in early 2021. In January 2021, the Council of the Agency adopted a decision on the disapproval of the Annual Report on Non-Discriminatory Compliance Programme for 2019. In October 2021, the Council adopted a Justified Opinion on Annual Report on Compliance Program Implementation for 2020 where the deficiencies in terms of unbundling within the given period were indicated, too.

In February 2022, the Agency Council approved the new Compliance Programme for Provision of Non-Discriminatory Behaviour of the Electricity Distribution System Operator which was adopted by "Elektrodistribucija Srbije" LLC Beograd following the completion of reorganization. In addition, in June 2022, the Agency Council approved the conditions for the appointment of the Compliance Officers. The Agency also gave prior consent to the appointment of the Compliance Officer within the "Elektrodistribucija Srbije" LLC Beograd.

Due to the change of the person responsible for monitoring compliance, the Agency Council approved the conditions for appointing and the term of office of the new compliance monitoring officer for the distribution system operator in February 2023. In September 2023, the Council issued a Reasoned Opinion on the Annual Report on the Implementation of the Compliance Program for 2021, which was prepared by this individual.

Acting upon the request of the company *GASTRANS* LLC Novi Sad in March 2019, the Agency Council adopted a Final Decision on New Natural Gas Interconnector Exemption which enabled exemption to the company *GASTRANS* LLC from the obligation of ownership unbundling, third party access rules and application of regulated natural gas transmission prices for 20 years. In March 2019, the Agency also approved the following legal acts in order to implement the mandatory long-term transmission capacity allocation:

- Tariff Methodology for Calculation of Natural gas Transmission Use-of-System Charges;
- Model of long-term contract on natural gas transmission which is concluded between *GASTRANS* LLC and participants of mandatory phase of long-term capacity allocation for which there is an exemption from third party access approved;
- Non-Discrimination Behaviour Compliance Programme of *GASTRANS* LLC;
- Decision on Conditions for Appointment of the Non-Discrimination Behaviour Compliance Programme Officer and
- Act on Appointment of Non-Discrimination Behaviour Compliance Programme Officer.

Following this, as early as in February 2020, the Agency certified *Gastrans d.o.o.* as a project company since at that moment the construction of the gas interconnector was ongoing. An obligation was prescribed to *Gastrans* to submit

evidence on the compliance of all the requirements for independent and non-discriminatory performance of natural gas transmission to the Agency following the expiration of the prescribed deadline and once the commercial operation begins. Within the deadline set in the Certification Act, Gastrans submitted evidence to the Agency based on which the Agency adopted a decision in 2022 on confirming that Gastrans LLC complied with all the conditions set by the Agency within the Certification Act which was adopted in February 2020.

In May 2020, the Agency approved Transmission Network Code of *Gastrans d.o.o*.

In December 2020, the Agency issued a license to Gastrans Ltd. for the activities of natural gas transportation and management of the natural gas transport system. In the same month, the Agency issued a decision confirming the formation of tariffs and initial prices for access to the transport system at the request of *Gastrans* Ltd.

The Agency assessed the correctness of the tariffs for long-term capacity and initial prices for access to the transport system established by *Gastrans* Ltd. by reviewing the requests submitted by Gastrans Ltd. to the Agency in 2021, 2022, and 2023.

Throughout 2021, 2022, and 2023, the Agency monitored the performance of transportation activities by *Gastrans* Ltd., as well as the reporting by the person responsible for overseeing the implementation of the Non-Discriminatory Behavior Program at *Gastrans* Ltd..

7.2.4 Deciding upon appeals

Pursuant to the Law, deciding upon appeals (second instance administrative procedure) which is performed as entrusted activities includes deciding upon the following appeals against:

- operator's acts which represents a decision upon an application for connection to the system, i.e. upon appeals filed when the system operator does not adopt a decision upon application for connection to the system in line with the timeframe prescribed by the Law;
- operator's acts on dismissal of access to the system, i.e. appeals filed due to failure to act upon filed request for access to the system within the timeframe prescribed by the Law and
- acts of energy entities dealing in oil transport through oil pipelines or energy entity dealing in oil derivatives transport through product lines on dismissal of access to the system as well as appeals filed due to failure to settle a request for access to the system within the timeframe prescribed by the Law.

Within the procedure of deciding upon appeals of customers, i.e. system users, the Agency tends to provide the protection of their rights via the provision of legality of decisions adopted by system operators.

In 2023, there were 484 files submitted and they mainly dealt with the activities and behaviour of energy entities in different areas of their operations. 368 of them are appeals settled by the Agency in the administrative procedure as entrusted activities, while 116 of them are different petitions and complaints submitted by natural and legal persons or requests related to the issuance of opinion on the enforcement of regulations within the competence of the Agency.

The Agency processed all the submitted complaints and submitted responses to the applicants while forwarding the issues to responsible state bodies for further procedure, when necessary.

As far as the appeals for which the Agency is responsible within the second instance procedure are concerned, all 368 appeals submitted for reasons stipulated by the Law were processed in 2023. The appeals were submitted:

- against failure of a responsible energy entity within the first instance procedure upon application on connection of the facility of the customer or producer to electricity or natural gas distribution system (the so called "administrative silence");
- against decision of electricity or natural gas distribution system operator dismissing application on connection to the system and
- against electricity distribution system operator's decision approving connection to the system, but customers complain against connection costs, technical conditions for connection, or against procedural decision of energy entities dealing in electricity distribution on suspension of procedure or dismissal of application.

363 appeals in total were filed against decisions of electricity distribution system operators, while there were 5 appeals filed against a decision adopted by natural gas distribution system operator.

So as to reduce the number of appeals and harmonise the practice of electricity distribution system operator in procedures implying applications on connection of facilities of both legal and natural persons to the power grid, the Agency made an analysis of all appeals submitted to it and of the most common reasons for annulment of decisions on connection within the procedure related to the appeal. In 2023, so as to reduce the number of unlawful decisions adopted by electricity distribution company, the Agency indicated the most common breaches of procedural and material regulations which lead to adoption of unlawful decisions and stressed legally binding commitments of energy entities within connection procedure. In 2023, there were 368 appeals which is considerably fewer than in 2022 (255) which is why the Agency will intensify working with experts employed with electricity and natural gas distribution operators and who decide on applications on connection to the system will be continued in the years to come.

Since the establishment of the Agency, with 2023 inclusive, there were 115 appeals to the Administrative Court of the Republic of Serbia against the decisions of the Agency within the second-instance procedure (Table 7-2):

Table 7-2: Number of appeals submitted to the Supreme/Administrative Court of RS against the Agency's decisions adopted within the second-instance procedure 2008-2023

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
Number	4	2	9	12	7	4	8	7	6	11	5	14	7	5	8	6	109

In 2021, a dispute was initiated at the Trade Court in Belgrade against the Agency as the Defendant 2 (Defendant 1 is the Ministry of Mining and Energy) upon a complaint for indemnity due to licence withdrawal which is being processed.

7.2.5 International activities

Pursuant to the Energy Law, ratified international agreements and Council decisions, the Energy Agency of the Republic of Serbia cooperates with regulatory authorities from other countries, as well as with other international bodies and organisations.

7.2.5.1 The Athens process and the Energy Community Regulatory Board (ECRB)

Signing and ratifying the "Treaty establishing the Energy Community" on October 25, 2005 in Athens which entered into force on 01/07/2006, the Southeast Europe countries (and UNMIK for APKM) and the EU initiated the process of creation of the Energy Community aiming at the expansion of the common EU energy market to the Southeast Europe region. By the decision of the Ministerial Council dated December 14, 2023, the "Energy Community Treaty" has been extended for 10 years, until 2036. In addition, based on Ministerial Council decisions, via the implementation of the Third Energy Package in the Energy Law, certain competences of the Energy Community Secretariat were introduced in the regulation of the national energy sector.

The Treaty establishing the Energy Community also defined the institutional framework for Energy Community functioning: Ministerial Council, Permanent High Level Group, Energy Community Regulatory Board, Energy Community Secretariat, Electricity Forum and Gas Forum. Subsequently, Oil Forum (2008), Legal Forum (2017), Sustainable Development Forum (2017) and Dispute Settlement Forum (2018) were founded.

Figure 7-1: Energy Community institutions

Pursuant to the commitments arising from the Treaty establishing the Energy Community, the Energy Agency of the Republic of Serbia participates actively in the work of Energy Community institutions[18], at the same time taking into account customer interests protection, as well as the position and goals of both power and gas economy of the Republic of Serbia. Cooperation is developed in coordination with state bodies within the competence of the Energy Agency of the Republic of Serbia defined by the Law. The Energy Agency of the Republic of Serbia participates in the work of the Energy Community Regulatory Board (which is an advisory body to the Energy Community Ministerial Council with possible executive functions), as well as of the Electricity Forum and Gas Forum.

The Energy Agency of the Republic of Serbia has considerably contributed to the development of organisation and procedures for the functioning of regional and Pan-European electricity and natural gas markets through an active participation in the work of Energy Community institutions and their expert teams. A representative of the Energy Agency of the Republic of Serbia was the chairman of the Energy Community Regulatory Board Working Group for Electricity (ECRB EWG) 2007-2018, while several representatives of the Energy Agency of the Republic of Serbia chair some ECRB sub-groups. The efficiency of the work of these bodies could be improved by more prompt preparation and more timely submission of material for their sessions.

In 2023, the Energy Agency of the Republic of Serbia participated in the following activities of the Energy Community Regulatory Board (ECRB):

Strategic and joint activities

[18] Costs of participation of Agency representatives within the Energy Community institutions are compensated by the Energy Community Secretariat

- Issuance of opinion on Preliminary Decisions on Transmission System Operators Certification in line with Article 9 of the Energy Community Ministerial Council Decision D/2011/02/MC-EnC on Implementation of Third Energy Package of Regulations on Internal Energy Market in the European Union;
- cooperation with associations of regulatory bodies in the energy field - Agency for Cooperation of Energy Regulators - ACER, Council of European Energy Regulators - CEER, Energy Regulators Regional Association – ERRA and Mediterranean Regulators – MedReg.

Electricity (Electricity Working Group)

The ECRB Electricity Working Group monitors activities on integration of electricity market in southeastern Europe and its functional integration into Pan-European electricity market. An integral part of this activity includes: regular monitoring of current affairs and processes related to electricity market integration in the EU; common workshops for ACER And ECRB on the EU CACM and FCA Regulation; harmonised regulatory survey of rules of the Coordinated Auction Office for Cross-Border Transmission Capacity Allocation on Interconnectors (SEE CAO) and preparation of joint draft rules for the adoption within ECRB; method of appointment of Nominated Electricity Market Operator in Contracting Parties as Precondition for Electricity Market Coupling of Contracting Parties with the EU Markets – SDAC (Single Day-Ahead Coupling) within "early" implementation of the EU Regulation 1222/2015 in the Energy Community Contracting Parties which were drafted by the Energy Community Secretariat with cooperation with the European Commission and ACER.

- During 2023, the ECRB Electricity Working Group regularly monitored the activities of the Contracting Parties regarding the implementation of the recommendation for designating a Nominated Electricity Market Operator (NEMO) in the Energy Community Contracting Parties, in accordance with Regulation 1222/2015 (CACM). Based on the Law on Amendments to the Energy Law, the Agency participated in the drafting of the Regulation on the Integration of Organized Day-Ahead and Intraday Electricity Markets, which transferred the necessary provisions of EU Regulation 1222/2015 for market integration and NEMO designation in the Republic of Serbia. However, the European Commission subsequently determined that this procedure was not legally valid for integrating the markets of the Contracting Parties with EU member states and that full implementation of the adapted EU Regulation 1222/2015 was required.
- During 2023, the ECRB Electricity Working Group monitored the Secretariat of the Energy Community's activities concerning the implementation of adapted EU Directives and Regulations in the electricity sector, as adopted by the Energy Community Ministerial Council decisions at the end of 2022. This included regulations that represent so-called network codes essential for the functioning of the electricity market and the operational work of the Energy Community's electricity systems. These codes aim to create conditions for faster integration of the electricity market in the Western Balkans into the single pan-European electricity market of the European Union, as well as the harmonization of procedures in operational system management and balancing. Facing the obligation for the Energy Community Contracting Parties to transpose these regulations into their national legislations by the end of 2023, the Secretariat of the Energy Community organized several virtual expert workshops to train regulatory bodies for this task. These included: A balancing workshop on September 20, 2023; A presentation workshop on the results of a study regarding the availability of 70% of interconnecting transmission capacity to market participants on September 26, 2023; A joint workshop with the World Bank on November 8, 2024, regarding the implementation of the integration package for cross-border capacity calculations in Southeast Europe; The package of regulations, adapted by the Energy Community since December 2022, includes: Procedural Act on Regional Market Integration 2022/PA/01/MC; Directive (EU) 2019/944 on common rules for the internal electricity market; Regulation (EU) 943/2019 on electricity; Regulation (EU) 942/2019 on ACER; Regulation (EU) 2019/941 on risk preparedness in the electricity sector; Regulation/Network Code (EU) 2016/1719 (FCA) on capacity allocation; Regulation/Network Code (EU) 2015/1222 (CACM) on capacity allocation and congestion management; Regulation/Guidelines (EU) 2017/2195 (GLEB) on balancing; Regulation/Guidelines (EU) 2017/1485 (SOGL) on operational rules for the transmission system; Regulation/Network Code (EU) 2017/2196 on emergency situations and system restoration. The Secretariat of the Energy Community decided that future working group meetings would be held physically only once a year (in conjunction with the Athens Forum), while the remaining two meetings would be held virtually via the Webex internet application. Workshops in 2023 were organized virtually via Webex by the Secretariat of the Energy Community.
- The 28th Electricity Forum, organized by the Secretariat of the Energy Community, was held in Athens on June 7 and 8, 2023. The forum featured panel discussions on the following significant topics and issues: Report on the implementation of emergency measures and the need to reduce energy consumption; Electricity market reform and elements of the new market design; The Energy Community's readiness for the carbon border adjustment mechanism; Pathway to market integration with the single European market – proper adjustment for accession; Regional cooperation of transmission system operators – a fundamental basis for European supply security; Strengthening renewable sources – are electricity systems and markets ready?

- A joint workshop by ECRB and ACER on market issues was held on December 5, 2023. It was dedicated to the oversight of the electricity market, during which ACER presented its experiences in monitoring the internal market in accordance with the “clean” energy legislative package, aimed at increasing market efficiency for the benefit of consumers. The workshop also discussed further cooperation between ECRB and ACER regarding the participation of Contracting Parties in ACER's annual report.
- As part of the working subgroup focused on the integration of renewable energy sources and flexibility, a report on the development of the regulatory framework for renewables and flexibility was completed in 2023 and subsequently approved by ECRB.
- Within the working subgroup dealing with the assessment of the implementation status of the System Operation Guidelines (SOGL) in the Energy Community Contracting Parties, a draft report was developed in 2023. This report provided an overview of the system operation rules for each Contracting Party and identified the provisions from the SOGL that have been voluntarily implemented in the system operation rules of each Contracting Party, based on a questionnaire derived from the System Operation Guidelines (SOGL). This comparison was made with the provisions of the system operation rules of the Energy Community Contracting Parties.
- Within the working subgroup focused on evaluating the regulatory framework for voltage regulation and reactive power management by TSOs in the Energy Community Contracting Parties, a draft report was developed in 2023. The report aimed to verify whether there is a regulatory framework in the region, based on a questionnaire focused on system services (voltage regulation and reactive power), the regulatory framework, and investments approved by regulatory bodies to address these issues.
- Within the working group for wholesale market integration, a report was developed in 2023 assessing intraday electricity markets, including cross-border balancing, based on questionnaires completed by the Contracting Parties.
- Within the working subgroup monitoring cross-border electricity trading in Southeast Europe, in accordance with ECRB Guidelines for market monitoring in Southeast Europe and using the market monitoring database and platform web interface (SEEAMMS), administration was carried out on a rotational basis among the subgroup members. An annual market monitoring report was not prepared due to issues with maintaining the platform interface, i.e., the inability to input data and problems with data pair entries for specific interconnectors.
- Instead of a compliance report for the Contracting Parties with the requirements of the EU Transparency Regulation 543/2013, the ECRB Electricity Working Group monitored the achieved level of transparency of the Energy Community Contracting Parties through the Energy Community Secretariat’s website, which continuously updates data related to the publication of data on the ENTSO-E (EMFIP) transparency platform.
- The Electricity Working Group participated in drafting an annex to the Report on the Monitoring of Wholesale Electricity Markets in line with EU practices (using ACER indicators for wholesale electricity market assessment) for 2023. The format and content of the annex were adapted to the new visual approach of ACER’s report, in the form of a presentation with four slides for the Contracting Parties, addressing issues such as: how the crisis and war have affected consumption in the Energy Community region during 2022/23; the production mix in the region; the beginning of the energy transition in terms of increasing the number of renewables in the region; and the integration of the Contracting Parties into the pan-European market.
- In May 2023, the Electricity Working Group prepared an updated report on the impact of high wholesale prices on national markets and measures taken in the Energy Community Contracting Parties. This report, developed with the participation of the national regulatory bodies of the Contracting Parties, was prepared without prior approval from ECRB and aimed to be regularly updated and published to provide timely information to market participants about the situation in the Energy Community electricity market.
- The Electricity Working Group monitored the work of the Joint Experts Team for Market Coupling (JET EnC-Joint Experts Team Energy Community), consisting of representatives from transmission system operators and exchanges (NEMO), with regulatory bodies participating as observers through the chair of the Electricity Working Group. In 2023, the focus of this team was on drafting the Market Coupling Operator Integration Plan (MCO IP). The EU NEMO committee requested a postponement of the approval of the draft plan to 2024.
- In accordance with Regulation 2019/943, ECRB was required to prepare a draft Report on Methodologies for Transmission and Distribution by October 5, 2023. Thus, the working group began drafting the report in 2023, using ACER questionnaires as a basis for ECRB questionnaires.

Natural gas (Natural Gas Working Group)

- As part of the regular activities of the working group on wholesale market supervision conducted in accordance with the 2023 Work Plan, data was collected on the wholesale natural gas market in the Energy Community for 2023. The collected data pertained to annual consumption, which showed a slight

decline across all Contracting Parties compared to the previous year. Additionally, information on supply sources and the number of suppliers active at interconnectors was gathered. Data on measures implemented in the wholesale and retail markets concerning natural gas price spikes was also analyzed.

- Data on the wholesale market was also collected and provided for the preparation of ACER's report on wholesale market supervision.
- Regarding the monitoring of network codes, data was collected, and reports on the application of network codes concerning harmonized transmission tariffs, capacity allocation, and congestion management were compiled and approved.
- In accordance with Article 27 of the Network Code on Harmonized Transmission Tariffs (NC TAR), ECRB reviews the consultation document prepared by the competent regulatory authority for public consultation regarding the adoption of the Methodology for Determining Natural Gas Transmission Prices. The regulatory authority from Moldova submitted the documentation necessary for conducting a public consultation in accordance with the Network Code on Harmonized Transmission Tariffs for ECRB's opinion. The working group analyzed the consultation document for public consultation from the Moldovan regulator according to the network code on harmonized transmission tariffs to form ECRB's opinion.
- ECRB provides recommendations on the maximum level of multipliers applied to increase the unit price of short-term capacity for natural gas transmission. ACER has the same obligation and, in performing this task, invited users to share information on whether capacity bookings change depending on whether some countries have adjusted multipliers for short-term capacities. This activity was also carried out by the gas working group. The maximum level of multipliers applied to increase the unit price of short-term capacity for natural gas transmission was analyzed for the purpose of forming ECRB's opinion. It was concluded that the maximum level of multipliers for short-term capacity products would remain unchanged.
- During the working group meetings, issues related to the injection of hydrogen and biogas into natural gas transmission and distribution systems were discussed.
- On September 28, 2023, the Energy Community Secretariat organized the 18th Gas Forum in Vienna. Panel discussions covered the following important topics for the gas sector: gas supply security for winter 2023/24, decarbonization of the gas market, future regulatory framework design, and opportunities for natural gas traders in the Energy Community.
- Participation in the work of the Gas Regional Initiative South-South-East (GRI SSE) of the European Union, where the most significant topics were diversification of natural gas supply sources and routes, and decarbonization.

Retail Electricity and Natural Gas Market and Customers Protection Working Group

- Preparation of the report on the functioning of retail electricity and natural gas markets in the Energy Community.
- In 2023, cooperation between the ECRB, CEER, and MedReg working groups on retail markets and consumer protection continued with a joint workshop. This workshop addressed topics related to the current state of the electricity market due to high prices, new EU regulations aimed at the operation of the new electricity market design, smart grids, the quality of services provided to customers, and the decarbonization of the energy sector.
- Data collection activities continued for the preparation of the report on the implementation status of the Consumer Protection Rules from the adapted Electricity Directive 2009/944 in the Contracting Parties.

REMIT Working Group (EC Regulation on Energy Market Integrity and Transparency)

In 2019, under the auspices of the Energy Community Regulatory Board, a REMIT Working Group was established and it monitors the implementation of the adapted EC Regulation on Energy Market Integrity and Transparency 1227/2011 (hereafter: Regulation). The Group members include the representatives of national regulatory authorities of the Energy Community Contracting Parties. The aim of this Working Group is to give recommendations and monitor the implementation of the adapted Regulation “REMIT” which was adopted by the Ministerial Council Decision on November 29, 2018. The Energy Community Regulatory Board adopted the Procedural Act on the work of the REMIT Working Group on August 7, 2020 where a method of cooperation and coordination of activities of Contracting Parties regulatory authorities within REMIT Regulation implementation was regulated. This Procedural Act established: 1) basis for coordination of Contracting Parties national regulatory authorities in performing their tasks in line with REMIT Regulation; 2) cooperation within the Energy Community Regulatory Board (ECRB) and REMIT Working Group; 3) format used by regulations within the procedure of registration of market participants and registry keeping; 4) basis for activities taken by the ECRB in the REMIT Regulation implementation and 5) obligation to protect the confidentiality of data and information exchanged between national regulatory authorities.

In accordance with the ECRB Decision on the establishment of the REMIT Working Group and the Work Program of this Working Group for 2023, the group organized its activities through six working subgroups:

- •Subgroup "Regulatory Guidance on REMIT" – Continued work on determining additional clarifications on the application of the adapted REMIT Regulation in the Energy Community, as well as assessing the possibility of using the updated guidelines adopted by the Agency for the Cooperation of Energy Regulators, to the extent possible, within the Energy Community.
- Subgroup "Central Registry" – Examined IT and other options for establishing a Central Registry of participants in wholesale markets in the Contracting Parties, to be managed by the Energy Community Regulatory Board Secretariat, and explored possibilities for automating data collection. It was decided that the ECRB Secretariat should provide access to all national registries of the Contracting Parties via the Energy Community Secretariat's website and publish all other practical information there.
- Subgroup "Inside Information Platform" – Monitored compliance with requirements for establishing a centralized platform for publishing insider (privileged) information by wholesale market participants, as REMIT Regulation requires such information to be published timely and effectively. In 2023, data were collected on the implementation of REMIT Regulation in this area, and a report on the implementation of the requirement to establish an Insider Information Publishing Platform was prepared. The report highlighted the need to supplement existing regulations in Serbia to designate the responsible entities (system operators, market operators, etc.) and fulfill the obligation to provide market participants with a single place to monitor published insider and other transparency-related information.
- Subgroup "Implementation of REMIT" – Representatives of the Contracting Parties exchanged experiences on the implementation of the adapted REMIT Regulation and regularly reported to the Energy Community Regulatory Board Secretariat on the activities undertaken by the Contracting Parties in 2023 to ensure full implementation of the Regulation. Some national regulatory authorities reported on procedures initiated by their national regulatory bodies.
- Subgroup "Penalty Regime" – Collected data to evaluate the adequacy of the implementation of obligations regarding the efficiency of penalties and the appropriateness of sanctions imposed in cases of violations (manipulation and abuse in wholesale electricity and natural gas markets). This is in line with the obligation of the Contracting Parties to implement the REMIT Regulation to ensure that penalties are proportionate and commensurate with the harm resulting from illegal behavior. A report based on the collected data was prepared and sent for review and approval to the Energy Community Regulatory Board, indicating inadequate implementation of REMIT Regulation and the need to include more detailed punitive provisions in national regulations, as Contracting Parties have committed to ensuring that sanctions imposed by competent authorities are appropriate and proportional to the harm caused.
- Subgroup "Coordination of Investigations" – Planned to review cases of REMIT Regulation breaches and exchange experiences, as well as to allow interested Contracting Parties to coordinate investigations jointly if a breach has a cross-border effect. In 2023, there were no cases of REMIT Regulation breaches requiring coordination between Contracting Parties.

In 2023, 4 meetings of the REMIT Working Group were held in total.

Energy Community Coordination Group for Cyber Security and Critical Infrastructure (CyberCG Coordination Group)

Energy Community Coordination Group for Cybersecurity and Critical Infrastructure has an aim to support and facilitate the cooperation between Energy Community Contracting Parties in the provision of safety during data exchange, i.e. in reaching a high level of security of information systems which serve for data exchange. In line with this, the main task of Cyber CG is to define "critical infrastructure" which represents information infrastructure which is most liable to cyber-attacks. In addition, a sum of most important data which are exchanged and which are of great importance for the energy sector will be defined within this coordination group. The aim is to protect these data.

Within Cyber CG, it is envisaged to work on the following activities:

- Identification of all energy entities which exchange data (transmission system operator, distribution system operator, suppliers, producers, national regulatory authorities, ministries in charge of energy…), identification of data and of critical infrastructure, etc.;
- Definition of strategic guidelines and giving instructions for data protection;
- Exchange of experience between Energy Community Contracting Parties and other interested parties related to data protection during the exchange of them;
- Provision of assistance to Energy Community Contracting Parties in capacity building in terms of provision of data safety and critical infrastructure protection etc.;

Each Energy Community Contracting Party has their representatives within Cyber CG. CyberCG members include: representatives of the ministries in charge of energy and national regulatory bodies of Contracting Parties, of the Energy Community Secretariat, European Commission, European Union Agency for Network and Information Security – ENISA), etc.

In 2023, there were no meetings of CyberCG Coordination Group.

Infrastructure

The representatives of the Energy Agency of the Republic of Serbia participate in the activities of working groups for Project of Common Interest for the Energy Community (PECI/PMI groups for electricity, natural gas and oil) which are established in line with provisions of the decision of the Energy Community Ministerial Council on the adoption of the EU Regulation on TransEuropean Energy Networks[19] (Regulation 347/2013 – the so-called TEN-E Regulation) which is aimed at drafting the list of priority gas and power infrastructure projects (the so-called PECI/PMI list). This list is drafted every second year. The procedure is executed by the Energy Community Secretariat. Following the adoption of the list by the Ministerial Council, these projects are qualified for benefits in terms of permit issuance, as well as for regulatory and financial incentives (to the extent to which TEN-E Regulation are transposed into local legislation). The members of the working groups for electricity, natural gas and oil are the representatives of the Energy Community Contracting Parties, representatives of ministries in charge of energy, representatives of the regulatory authorities of the Energy Community Contracting Parties and project promoters (electricity transmission system operators, natural gas transmission systems operators, natural gas storage operators, oil transport systems operators and representatives of smart grid projects).

In 2023, the procedure for drafting PECI/PMI list was not executed and, in line with this, meetings of these working groups were not held in 2023. The last procedure was executed in 2020.

The latest adopted PECI/PMI list from 2020[20] in the electricity field includes the project of TransBalkans Corridor – 400 kV interconnector with sections:

- 400 kV interconnector Bajina Bašta (RS) – Višegrad (BiH) – Pljevlja (MNE) (PECI project);
- 400 kV interconnector Pljevlja (MNE) – Lašva (MNE) (PECI project);

In the field of natural gas, the following projects are on the PECI/PMI list for 2020:

- Interconnector Serbia – North Macedonia (PECI Project);
- Interconnector Bulgaria – Serbia (PECI);
- Interconnector Serbia – Croatia (phase 1, PMI Project).

7.2.5.2 Berlin Process – initiative "Western Balkans 6" (WB6)

Activities related to the energy sector regarding financing priority regional infrastructure projects through IPA multi-beneficiary program, as well as the implementation of reform measures (so-called "soft measures") which stimulate the development of the regional electricity market represent a constituent part of the so-called Berlin Process, initiated on the Western Balkans Summit in August 2014. The most important reform targets of this initiative is the integration of daily (spot) electricity markets (the so-called "market coupling"), integration of balancing markets and maximization of benefits of the existing coordinated auction office (transmission capacities on interconnectors) of the southeastern Europe.

Within its jurisdiction, the Energy Agency of the Republic of Serbia contributes to the realization of the activities defined by this initiative such as: functional unbundling of the distribution system operators, certification of transmission system operators, cooperation with the Agency for Cooperation of Energy Regulators (ACER), coupling daily (spot) electricity markets ("market coupling") with neighbouring markets, etc.

In 2023, there were activities of the Programme Steering Committees for Cross-Border Balancing and for Daily Market Integration.

7.2.5.3 CESEC (Central and South Eastern Europe Gas Connectivity) Initiative

CESEC Initiative was launched by a Memorandum of Understanding between signatories from the Western Balkans, Black Sea region and the EU so as to coordinate support to cross-border trans-European gas infrastructure projects (which provide for the diversification of the natural gas supply in the region) and for the harmonisation of the relevant legislation. Since 2017, the field of operation of CESEC initiative was also extended to the field of electricity, energy efficiency and renewable energy sources.

The activities of CESEC are steered by CESEC High Level Group, HLG, which aims at the acceleration of the completion of the projects on the construction of interconnection lines which are facing difficulties in realization, identification and support to the construction of a limited number of infrastructure projects in central and southeastern Europe, identification of obstacles in the realization of these projects (e.g. obstacles of regulatory nature, permit issuance regime, technical and financial obstacles) as well as the realization of the action plan which includes project-specific technical, financial and regulatory measures in order to remove those obstacles.

Within its competence, the Energy Agency of the Republic of Serbia contributes to the realization of the activities defined within this initiative such as: certification of transmission system operator, operationalisation of mechanisms

[19] Decision No. D/2015/09/MC-EnC of 16/10/2016

20 The ruling list of priority infrastructure projects was adopted by the Ministerial Council Decision No. D/2020/04/MC-EnC of 29/12/2020.

for capacity allocation on interconnection points and congestion management mechanisms, cooperation with the Agency for Cooperation of Energy Regulators (ACER), regional gas market integration, etc.

7.2.5.4 Participation in energy regulators' associations

The Energy Agency of the Republic of Serbia is a member of the Council of European Energy Regulators – CEER – a body with a mission to contribute to the establishment of a unique, competitive and efficient energy market in the European Union via the cooperation between independent energy regulators. The CEER General Assembly accepted the Energy Agency of the Republic of Serbia as an Observer within this body on the session held on December 12, 2018 in Brussels.

The Energy Agency of the Republic of Serbia is a full member of ERRA (Energy Regulators Regional Association), an expert association of regulators aiming at the improvement of cooperation, exchange of experience and capacity building in member states. ERRA links the regulators from Southeast and East Europe, from former USSR, NARUC – USA regulators association, as well as the regulators of certain countries in Asia and Africa. So as to build capacity and exchange experience with other national regulatory bodies in several fields of regulation theory and practice (price regulation, competition and energy market, licensing, etc.) and to have insight into options for their implementation in Serbia. In 2023, the representatives of the Energy Agency of the Republic of Serbia participated in the activities of ERRA Chairmen Committee, Natural Gas Market and Economic Regulation Committee, Electricity Market and Economic Regulation Committee and Renewable Energy Committee.

The Energy Agency of the Republic of Serbia is a member and one of founders of the Permanent Advisory Forum of National Regulatory Authorities of Balkans Countries (Advisory BAF Forum). The Advisory BAF Forum which includes the Energy and Water Regulatory Commission of the Republic of Bulgaria (EWRC), the Regulatory Authority for Energy of the Republic of Greece (RAE), the Energy Agency of the Republic of Serbia (AERS), the Energy Regulatory Commission of Macedonia (ERC), the Energy Regulatory Agency of Montenegro (REGAGEN), the Albanian Energy Regulatory Authority (ERE) and the Energy Regulatory Commission of the Republic of Srpska (RERS) will via the Board of Regulators or via ad hoc groups, within their jurisdiction, provide a framework for discussions, exchange of experience, and, when possible, for the drafting of common positions and recommendations on regulatory issues in the field of electricity, natural gas, water and waste water markets in the region. In 2023, the electricity working group within BAF was not active.

In 2023, the BAF Working Group for natural gas market liberalization was not active.

Upon the initiative of the Italian regulatory authority ARERA, on December 16, 2022, the Balkan Energy School (BES) was formally established under their leadership. The members of the School are regulatory authorities from the Western Balkans. The Energy Agency of the Republic of Serbia took the status of an observer and actively participated as an observer in 2023, attending seminars and workshops organized as part of the "Balkan Energy School" with its representatives at no cost.

7.2.5.5 European integration

The representatives of the Energy Agency of the Republic of Serbia participated in the work of the Board for the implementation of the Stabilisation and Association Agreement – sub board for transport, energy, environment protection, climate changes and regional development where they presented the level of implementation of commitments within its competence, related to regulatory issues in the energy sector and regional integration.

The representatives of the Energy Agency of the Republic of Serbia also participated within the subgroup for energy of the Expert group of the coordination body for the preparation and negotiations on Serbia's accession to the European Union (SG 15 – Energy).

8. AGENCY'S FINANCIAL REPORT

Financial operations of the Agency in 2023 were in line with the 2023 financial plan which was approved by the National Assembly ("Official Gazette of RS", No.142/22 of 27/12/2022).

The plan defines total revenues and expenditures of the Agency and contingency reserves as well as the elements for comprehensive insight into the income and employment policy. In October 2022, in line with the obligations arising from the Energy Law, the Agency submitted its 2023 Financial Plan to the National Assembly for approval and it was approved and adopted in December 2022.

This report illustrates planned and actual utilisation of funds per each purpose from the revenue which, in line with the Energy Law and Financial Plan arises from: the costs for the license issuance, part of use-of-system charge – regulatory fee and financial revenues and other revenues.

Table 8-1: Total Agency's revenues in 2023

RSD

No.	Revenues	Realised 2022	Plan 2023	Realised 2023
1	Revenue from licenses	16,876,924	20,669,038	23,454,832
2	Revenue from regulatory fee	210,593,514	254,948,512	254,467,383
3	Transferred extra revenue from last year	0	0	0
4	Revenue from grants and reimbursements	691,411	1,500,000	789,860
5	Financial revenues and other revenues	813,983	920,000	2,281,241
6	Collected corrected liabilities	0	0	0
	TOTAL REVENUE	**228,975,832**	**278,037,551**	**280,993,316**

NOTES ON REVENUES:

In 2023, total revenue amounted to RSD 280,993,316, reflecting a 23% increase compared to the revenue in 2022.

In 2023, **the revenue from licence fee** was calculated in line with the Decision on Level of Costs for Energy Licence Issuance ("Official Gazette of RS", No. 42/22 which was in force as of April 9, 2022) and with the Decision on Harmonisation of Level of Costs for Energy Licence Issuance ("Official Gazette of RS", No. 24/23 which was applicable as of 06/04/2023) and the Decision on the Level of Costs for Energy Licence Issuance ("Official Gazette of RS" No. 42/22 which was applicable as of 09/04/2022). These Decisions set the level of fee for licence issuance for certain energy activities as well as the level of fee for amendments to the decision on licencing.

The fee covering costs of licence issuance is set upon the moment an application is filed by an energy entity and it covers the whole period of licence validity of 10 years, i.e. 30 years. The fee is charged in advance or at the moment of the application submission.

In accordance with this, revenue from fees for issuing new licenses amounted to RSD 20,758,489, and for amending existing decisions for 2023 totaled RSD 2,696,343, making a combined total of RSD 23,454,832. Between January 1 and December 31, 2023, 100 licenses were issued for various energy activities, and 37 amendments were made to existing licenses based on submitted requests and fulfilled conditions.

In 2023, the revenue from licensing fees increased by 39% compared to 2022 and exceeded the planned amount by 13%. In the total revenue structure, licensing fees account for 8.35%.

Revenue from **regulatory fees**, which includes the portion of the tariff for access to and use of the electricity transmission system, natural gas transport, and oil transport via pipelines, amounted to RSD 254,467,383 in 2023, representing 90.56% of the Agency's total revenue (compared to 91.97% in 2022). It is calculated quarterly in line with the Methodology and defined procedures and it depends on the amount of maximum allowed revenue of energy entities and the date when approved energy entities' decisions on transmission and transport fees are enforced.

The calculated and realized amounts of regulatory fees in 2023 are in line with the planned amounts for the year, showing a 21% increase compared to the revenue achieved in 2022. Given their share in the overall revenue structure, regulatory fee revenues ensure the Agency's operational security and stability.

Refund revenues are formed based on documented expenses for official trips abroad and are refunded by the Secretariat of the Energy Community from Vienna. These revenues amounted to 789,860 dinars, representing 53% of the planned amount, and show a modest increase of 14% compared to the refunds for official travel expenses in 2022.

Financial revenues amounting to RSD 1,963,449 account for revenues arising from the a vista interest rate for deposits in the business bank BANCA INTESA JSC which is calculated on monthly level for RSD funds on the Agency account.

Other unoperational and extraordinary revenues amounted to RSD 317,791 in total.

Table 8-2: Total Agency expenditure in 2023

RSD

No.	EXPENDITURE	Realised 2022	Planned 2023	Realised 2023
1	**Material, fuel and energy costs**	4,113,573	5,834,406	4,201,737
1.1	- material (operating cost)	1,606,777	2,383,615	1,806,278
1.2	- fuel and energy	2,506,795	3,450,791	2,395,459
2	**Salaries, allowances and other expenditure**	178,214,147	212,472,830	197,161,089
2.1	- salaries and allowances (gross)	146,924,559	174,046,133	162,624,592
2.2	- levies paid by employer	23,189,596	25,859,967	24,202,227
2.3	- fees in line with other contracts	1,226,421	1,530,501	1,500,445
2.4	- other personal expenditure and fees	6,873,571	11,036,230	8,833,825
3	**Production services**	26,727,472	33,663,026	28,604,716
3.1	- transport	1,621,310	2,295,072	1,854,228
3.2	- maintenance	3,400,038	5,453,611	2,475,361
3.3	- lease	18,556,977	21,611,750	20,244,366
3.4	- marketing and advertising material	258,460	389,186	384,936
3.5	- other services	2,890,686	3,913,408	3,645,825
4	**Depreciation and reserves**	7,217,804	10,018,935	8,128,503
5	**Non-material expenditure**	6,942,827	9,894,034	8,226,029
5.1	- non-production services	2,978,885	4,323,444	3,402,609
5.2	- costs of representation	468,289	541,475	536,186
5.3	- insurance premium	1,638,379	2,680,800	2,309,494
5.4	- payment operations	235,280	318,338	263,074
5.5	- membership	888,913	907,200	887,098
5.6	- taxes and fees	717,812	1,112,776	823,450
5.7	- other non-material expenditure	15,270	10,000	4,117
	OPERATIONAL EXPENDITURE	**223,215,822**	**271,883,232**	**246,322,074**
6	**Financial and other expenditure, reserves for unplanned costs**	37,334	6,154,319	53,191
	TOTAL EXPENDITURE	**223,253,156**	**278,037,551**	**246,375,265**
7	**Financial result – extra revenues**	**5,722,676**	**0**	**34,618,051**

NOTE ON EXPENDITURE:

In 2023, total expenses amounted to 246,375,265 RSD, indicating an increase of approximately 10% compared to the expenses in 2022.

The realized total expenses in 2023 are as follows:

Material, fuel, and energy expenses: In 2023, these expenses were 1,632,670 RSD less, or 28%, compared to the planned amounts. Specifically, fuel costs for vehicles and electricity costs were 1,055,332 RSD lower than planned, while office supplies, utilities, and other materials were 577,338 RSD less.

Gross salaries, employer contributions, temporary employment contracts, and other personal expenses and allowances: These were 7% lower than planned, totaling 15,311,741 RSD less, with the following details:

Gross salaries: These were 11,421,541 RSD less than planned, amounting to 93% of the planned amount. Employer contributions were 1,657,740 RSD less than planned. The larger deviation from planned salaries was due to the departure of three legal sector specialists and the deviation from the planned hiring schedule for three new employees (hiring in December instead of the planned June).

Allowances under other contracts: These were nearly in line with the planned amount, with only a deviation of 30,056 RSD.

Other personal expenses and allowances: These accounted for 80% of the planned amount, being 2,202,405 RSD less.

Within the category of Other personal expenses and allowances (including domestic and international travel expenses, employee transportation, assistance and other payments to employees, severance payments, and anniversary awards), the most significant deviations from the planned amounts were observed in employee transportation costs, as well as reduced expenses for air travel and per diem allowances during international business trips.

One of the biggest problems the Agency has been facing for several years is the lack of highly-qualified personnel (in total, 14 employees have left the Agency since its establishment) and slower new employment procedures which are crucial. For certain, this is due to multiannual fairly slow salaries growth in the Agency in comparison to the public and private sector in the energy field. This fact, along with the limited employment procedures, also has a negative effect to the dynamics of activities within the competence of the Agency.

In order to overcome difficulties caused by the increased workload and a small number of employees, and to improve the age structure of the staff, in addition to hiring 4 interns during 2022 and 2023, contracts were also signed with two more professional associates in the legal and economic fields at the end of 2023.

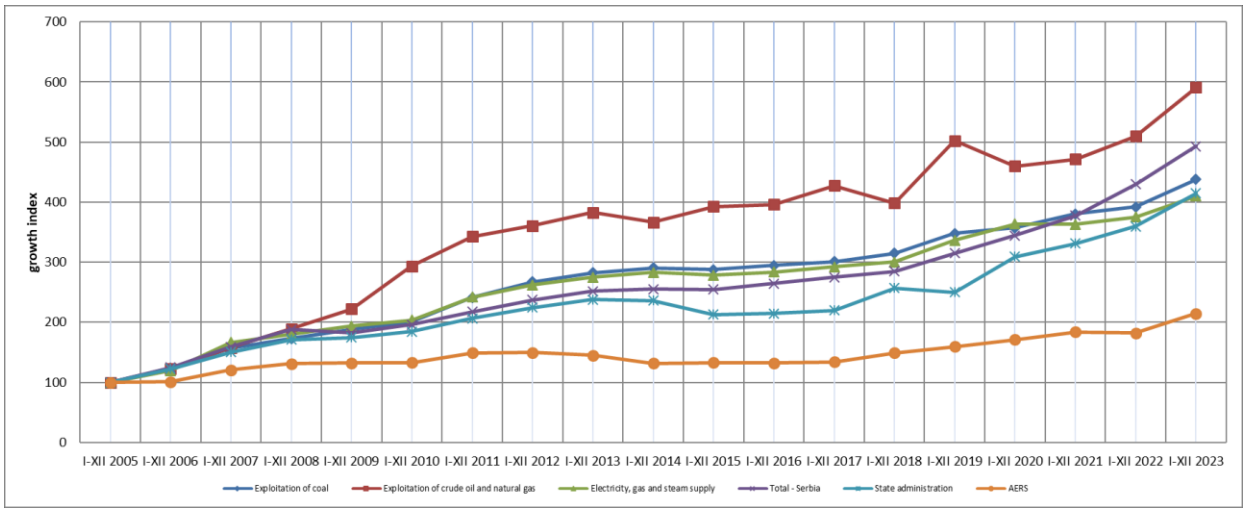

Figure 8-1: Base index of average annual net salary trend 2005.=100

At the end of 2023, the Agency has a total of 48 employees, including 45 permanent staff members, among whom are the Council members. Three employees are on fixed-term contracts, including one intern. The tables below provide a detailed overview of the qualification and age structure.

Table 8-3: Qualification structure of employees

Professional qualification	31/12/2022		Plan 2023		31/12/2023	
	No.	Share in %	No.	Share in %	No.	Share in %
PhD (A Doctor of Philosophy)	4	8.7	4	7.8	4	8.3
Master	1	2.2	1	2	1	2.1
BSc/BA (Bachelor of Science/Arts)	36	78.2	41	80.4	38	79.2
College degree	0	0	0	0	0	0
Secondary school degree	4	8.7	4	7.8	5	10.4
Primary school degree	1	2.2	1	2	0	0
Total	46	100	51	100	48	100

In addition to high qualification structure, there is higher average age of employees in the Agency. Therefore, the length of service on December 31, 2023 for 62.8% of employees amounted to over 20 years. To the extent to which such age structure of employees is expected, bearing in mind highly-specialised activities of the Agency as well as the relevant demand in experience when a vacancy is announced, this age structure also indicates that there is a need to reduce the age level in the future so as to secure the continuity of the Agency operations.

Table 8-4: Structure of employees in terms of length of service

Length of service	31/12/2022		Plan 2023		31/12/2023	
	No.	Share in %	No.	Share in %	No.	Share in %
up to 5 yrs	1	2.2	1	2	3	6.3
from 6 - 10 yrs	3	6.5	8	15.7	4	8.3
from 11 - 15 yrs	2	4.3	2	3.9	0	0
from 16 - 20 yrs	8	17.4	8	15.7	8	16.7
from 21 - 25 yrs	11	23.9	11	21.6	10	20.8
from 26 - 30 yrs	10	21.8	10	19.6	11	22.9
from 31 - 35 yrs	3	6.5	3	5.9	5	10.4
> 35 yrs	8	17.4	8	15.7	7	14.6

The costs of production services are 15% lower than planned for 2023, amounting to a total of 5,058,310 RSD. Analyzing these costs, the largest impact comes from maintenance services, which are 55% below planned amounts, or 2,978,250 RSD less, and business space rental services, which are 6% below planned amounts, or 1,367,384 RSD less. Additionally, transportation services costs are 19% lower, totaling 440,844 RSD. Other services, including utilities, printing services, advertisements, and others, are collectively 7% lower than planned, or 267,583 RSD less.

Depreciation and provisions are calculated in accordance with the relevant accounting policies and applicable rates, being 19% less than planned, or 1,890,432 RSD less. The deviation in calculated depreciation compared to the planned amount primarily occurred due to the procurement of certain equipment (server) at a significantly lower price than expected and planned, as well as the difference in the timing of equipment and intangible asset acquisitions (later procurement in the second half of the year).

Intangible costs are lower for the entire cost group compared to planned amounts by 1,668,005 RSD, or 17%. Individually, these costs are realized as follows:

Non-production services are 21% less than planned, amounting to 920,835 RSD less. The largest deviation from the planned amount within this cost category (audit costs, consulting services, seminars and registrations, accounting software costs, professional development and literature, legal services, and other non-production services) is seen in professional development, which is 70% less, or 531,000 RSD. The contracted amount for professional training in 2023 will be realized in 2024.

Representation and membership fees are almost at the planned level, with a total deviation amounting to 25,391 RSD.

Insurance premiums are 371,306 RSD less than planned, or 14% lower, as insurance for equipment, as well as collective mandatory insurance and voluntary health insurance for employees, were obtained under more favorable conditions than expected and planned.

Taxes and fees are 26% lower than planned, or 289,326 RSD less. This is primarily due to the difference between planned and actual costs for contributions related to the employment of disabled persons, which were planned at a higher amount due to the anticipated increase in the number of employees in the Agency.

Operational result:

On December 31, 2023, there was an extra revenue in comparison to expenditure of RSD 34,618,051 out of which 50% of realised revenue amounting to RSD 17,309,025.50 is transferred to the financial plan for next year.

In order to provide continuous and reliable operation of the Agency, the accumulated amount of realized extra revenue from previous years as well as from 2023 represent an adequate reserve in operationally available funds and it is the only for the balance item “Capital”. Thereby, certain security in the operation of the Agency is provided while in the given legal framework there are no financial sources that could be dependable for the operations of the Agency.

Investments in equipment and software. The Agency does not own real estate while the movables include: computer equipment and software, office furniture, technical equipment, other equipment and low-scale inventory. The EAR concluded a contract on their procurement.

The Agency procured equipment from its own funds in the period 2007 – 2023 as indicated in Table 8-5. Procurements were always realised in line with the procurement plan and the Law on Public Procurement. This was done mainly so as to replace a part of fixed assets which were written down, first of all computer equipment.

Table 8-5: Purchase of different equipment and software in the Agency

RSD

Procurement	2007-2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Cars	13,418	0	0	0	2,694	4,535	0	0	0	**0**
Computer equipment, software, network	41,298	2,877	3,637	4,149	2,890	6,662	4,726	4,670	4,912	**7,471**
Office furniture and different equipment	6,460	0	887	321	585	462	840	843	99	**146**
Telephone devices, telephone switchboard, access control	3,697	287	400	302	207	454	531	291	599	**1,366**
Video surveillance, network	1,060	0	0	0	0	0	0	0	0	**0**
Total	**65,934**	**3,165**	**4,924**	**4,772**	**6,376**	**12,113**	**6,097**	**5,804**	**5,610**	**8,983**

Unwritten off – current level of material and non-material assets on December 31, 2023 amounts to RSD 19,546,759. The given value includes 44% of active assets, i.e. out of total 942 items of equipment and software which are used, 525 are items of assets which are written of in bookkeeping terms. The given fact indicates a high level of writing off and depreciation of assets and it also indicates the need to examine the utility rate of equipment regularly and assess the necessity of its replacement.

In line with the legal obligation, in line with the Energy Law, the audit of the 2023 financial report by an authorised auditor was completed. In the opinion of the auditor, the financial report represents the financial positions of the Energy Agency on December 31, 2023 in a true and fair manner, for all materially-relevant aspects as their financial success for the year completed on that date in line with accounting regulations applicable in the Republic of Serbia.

Contents of tables

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Abbreviations and foreign phrases

ACER	Agency for the Cooperation of Energy Regulators
APKM	Autonomous Province of Kosovo and Metohija
Benchmarking	Comparative analysis of similar (indicators, companies, activities, etc.)
CEER	Council of European Energy Regulators
BiH	Bosnia and Herzegovina
DS	Distribution system
EnC	Energy Community
ECRB	EnC Regulatory Board
HHI	Herfindahl-Hirschman Index – indicator of market concentration level
ITC Agreement	Multi-year Pan-European agreement between transmission system operators on compensation of costs for the utilisation of neighbouring transmission networks
SEE	South-eastern Europe
EMS JSC	*Elektromreža Srbije*, Joint Stock Company
PE *EPS*	Public Enterprise *Elektroprivreda Srbije* (Electric Power Industry of Serbia)
mtoe	Million tons of equivalent oil
NTC	Net Transfer Capacities
REMIT	Regulation on wholesale energy market integrity and transparency, No. 1227/2011, adopted by the European Parliament and the European Council of Ministers
MRE	Ministry of Mining and Energy
NIS	Company for Exploration, Production, Processing, Distribution and Trade in Oil, Oil Derivatives and for Exploration and Production of Natural Gas *Naftna industrija Srbije* (Petroleum Industry of Serbia), JSC
RS	Republic of Serbia
UNMIK	United Nations Interim Administration Mission in Kosovo, established by the Security Council by Resolution 1244 (1999)

Conversion factors for energy equivalents

	kJ	kcal	kWh	kg oe*
1 kJ	1	0.2388	0.000278	0.000024
1 kcal	4.1868	1	0.001163	0.0001
1 kWh	3,600	860	1	0.086
1 kg oe	41,868	10,000	11.63	1

* kilograms of equivalent oil

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